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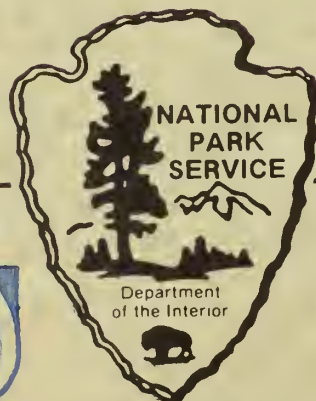


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NATIONAL PARK SERVICE

RESEARCH/RESOURCES MANAGEMENT REPORT SER-90

Visitor Use Patterns at Great Smoky Mountains National Park



United States Department of the Interior

National Park Service
Southeast Region

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VISITOR USE PATTERNS AT GREAT SMOKY MOUNTAINS NATIONAL PARK

by John D. Peine and James R. Renfro

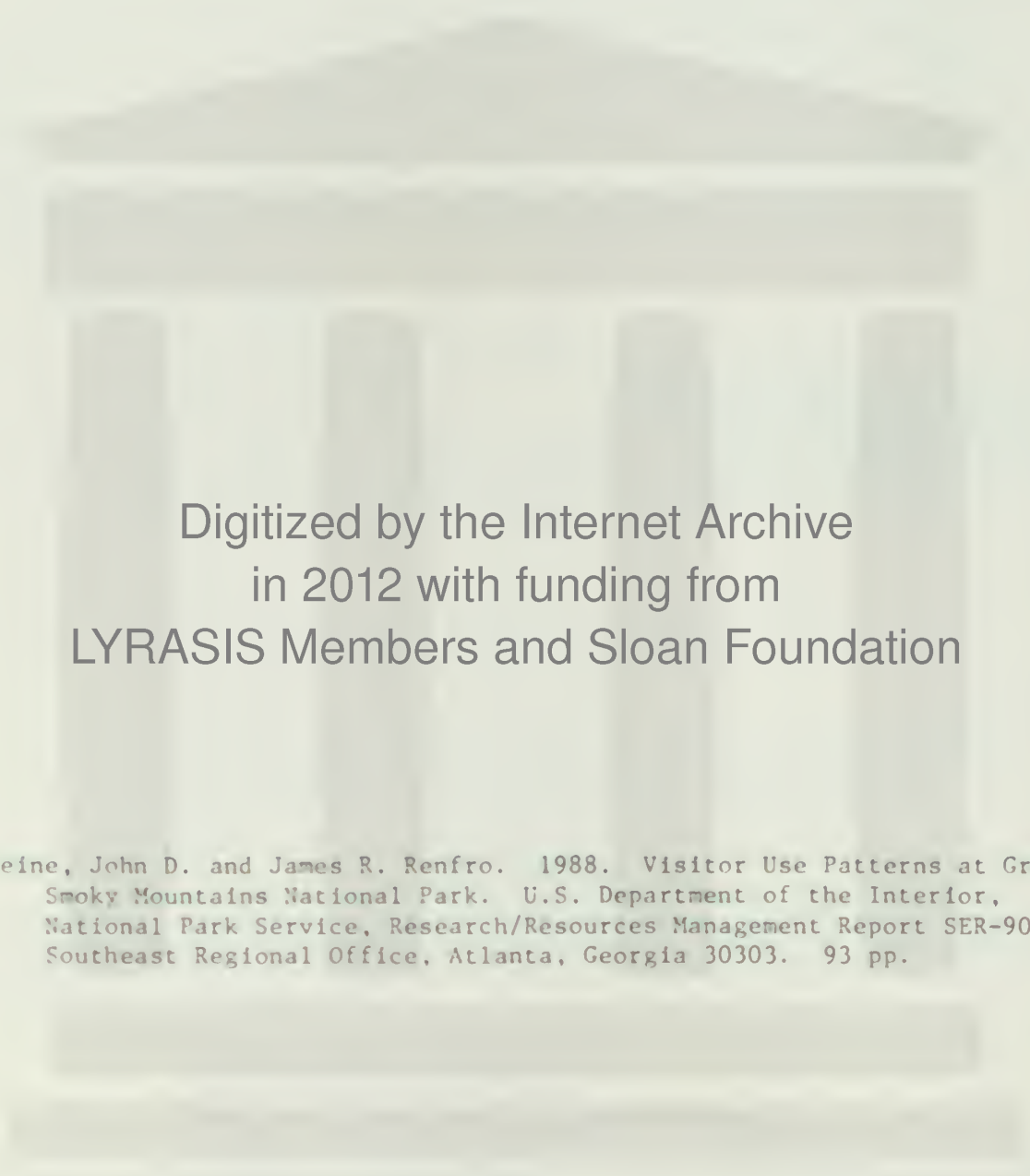
NATIONAL PARK SERVICE - Southeast Region

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August 1988

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ABSTRACT

Study objectives are (1) to provide a demographic, behavioral, and economic portrait of the visiting public; (2) to establish a taxonomy of visitor use patterns within Great Smoky Mountains National Park; and (3) to replicate elements from visitor use studies conducted in 1956 and 1975 to establish trends in visitor characteristics, use patterns, and expenditures. The target population sampled was the existing traffic from the major park entrances of Gatlinburg, Cherokee, and Townsend. Data was also collected at a smaller "finger" entrance to characterize differences from the main entrances.

Significant differences in age, group size, and activity patterns were recorded by season. Visitor origin has shifted dramatically in the last 10 years, from the midwestern region of the U.S. to the Deep South. Most park patrons are quite familiar with the park, with four out of five having been to the park previously. There has been a dramatic decline in length of stay in the park (12 percent) and in the region (25 percent).

For the vast majority of visitors using the main entrances, the visit to the park is largely a windshield experience. Over 16 percent never turn their vehicle engine off during their visit. The average number of stops is 1.7, with the average amount of time spent per stop being 27 minutes. Most stops by visitors using the main park entrances are facility oriented (95 percent) and front country oriented (97 percent). Viewing scenery, taking photographs, and viewing historic structures are by far the most popular recreational activities.

When factors such as the number of trips into the park per day and per year are taken into account, as well as length of stay and group size, the total number of visits to the park (9.3 million in 1985) translates into 1.7 million individuals or approximately 500,000 groups.

Trends in expenditures over 30 years are represented. Holding dollar values constant, the greatest increases in expenditures over a 10-year period are for gifts and souvenirs, admission fees, and hotels/motels. This reflects the increased growth in the tourism industry in the region. Average expenditures per group is approximately \$100 per day. Factoring in a conservative multiplier effect of 1.5, the overall impact of visitor expenditures in the region exceeds \$345 million.

ACKNOWLEDGEMENTS

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STUDY PURPOSE

Introduction

The management of people has long been a high priority activity at Great Smoky Mountains National Park (GRSM), the nation's most visited national park. The diversity of park resources and facilities provides the visitor with a great variety of opportunities to enjoy the deciduous forest biome of the Southern Appalachian Mountains.

For example, there are 18 visitor entrances to the 520,004-acre park, 28 watersheds, 732 miles of rivers and streams, 16 peaks that rise to altitudes of more than 6,000 feet above sea level, 1,300 native species of vascular plants, 130 native tree species, 346 miles of scenic roadways, 1,024 front country campsites in 10 locations, 9 picnic grounds, 953 miles of hiking and horse trails (69 miles are along the scenic Appalachian Trail), 82 backcountry campsites, 18 backcountry shelters, 5 horse camps, 70 historic structures, 3 visitor centers, and over 100 weekly interpretive programs offered in the summer season.

This combination of the extraordinary natural resource base, in close proximity to the nation's geographic center of population, results in the enormous popularity of this park. Therefore, it is fitting that the sociological data base be so rich in GRSM where human and natural resources management must be held in such delicate balance.

Objectives

As a result of this diversity of attractions and volume of people that enjoy them, visitor use patterns are extremely complex. The overall purpose of this

study was to quantify the relationships between visitors, resource attractions, and services provided by the National Park Service. The specific study objectives were as follows:

1. To provide a demographic, behavioral, and economic portrait of the visiting public,
2. To establish a taxonomy of visitor use patterns within the park, and
3. To replicate elements from visitor use studies conducted in 1956 and 1975 to determine trends in visitor characteristics, use patterns, and expenditures.

Target Populations

The target population was visitors exiting from the major park entrances of Gatlinburg, Cherokee, and Townsend. These interview points were chosen in order to replicate the methodologies of two previous GRSM visitor surveys: those conducted in 1974 and 1975 by Amusement/Recreation Marketing Services, Inc., referred to thereafter as the 1975 ARMS visitor survey; and the Great Smoky Mountains National Park Travel Study of 1956, hereafter referred to as the 1956 Travel study. The target population was further limited to persons exiting the park in private vehicles.

A subset of data was also collected at the Greenbrier entrance to the park, one of the 15 less popular entrances to the park which together contribute 19 percent of the total estimated visitation. This dimension to the study was included in order to document the very divergent use patterns and visitor characteristics associated with these types of areas compared to those using the main entrances. Studying visitor behavior only from the samples taken at the main entrances does not give a total picture. Different use patterns

occur at the lesser or finger entrances to the park, where people are likely to participate in specific activities outside their vehicles. Greenbrier is one such area. Unfortunately, limited resources did not allow for much sampling time at Greenbrier. No attempt was made to assess how representative Greenbrier may be of other finger entrances to the park.

Applications to Management

Throughout the report, the relevance to park management of the data presented will be cited. This will be addressed in three main areas: (1) defining the park clientele, (2) describing the nature of visitor use of park resources and services, and (3) the economic impact of the park visitor on the GRSM region.

METHODS

Relationship to Previous Studies

The study results can be compared directly to three previous studies relevant to GRSM. The first is the 1982-1983 Nationwide Recreation Survey, in which respondents were asked which national parks they had visited, along with the length of time since their last visit to a national park. This data set provides an important perspective on defining the GRSM clientele in comparison to that of other parks and those Americans who do not use the National Park System (Nationwide Recreation Survey 1982-1983).

The second and most directly comparable study is the 1975 ARMS effort, in which sample design and question construction were replicated in the 1985 study as much as feasible in order to make valid comparisons between the two studies. This study affords a unique opportunity to identify trends in demographics, use patterns, and trip expenditures (Amusement/Recreation Marketing Services 1975).

The timeframe for trend lines was greatly expanded by including a third study, the GRSM Travel Study conducted in 1956 by the North Carolina State Highway and Public Works Commission, the Tennessee State Department of Highways and Public Works, and the United States Bureau of Public Roads. This study allows extension of trend lines for demographics, origin/destination, and trip expenditures to 29 years (Great Smoky Mountains National Park Travel Study 1956).

Survey Instrument

Figure 1 is a schematic diagram of the questionnaire subject content. The survey instrument is titled the Park Visitor Census (PVC) and was approved by the United States Office of Management and Budget via permit number 1024-0030, with an expiration date of December 31, 1985. An asterisk is located by questions included in the 1975 ARMS survey. A double asterisk is located by those questions related to the 1975 ARMS survey and the 1956 Travel study. A copy of the instrument is included in Appendix B.

One primary difference between the 1975 ARMS and 1985 PVC survey instruments is that the ARMS traced the entire trip through the park for multiple days, and the PVC limited recall to a one-day visit to minimize potential recall bias. As a result, trip routes in the park identified in the two studies are not directly comparable.

Sampling Strategy

A total of 1,978 personal interviews were conducted. All interviews were made as visitors exited the park at four locations, shown in Figure 2. The three main locations of Gatlinburg, Cherokee, and Townsend were the same as those utilized for the 1975 ARMS and 1956 Travel study period. The Greenbrier location was lightly sampled to demonstrate differences likely to exist at the finger entrances to the park. Sample distribution was approximately proportional to the traffic volume recorded by traffic counters at each of the three main entrance locations, as reported in Table A-2, Appendix A. Even though Greenbrier visits constituted only 1 percent of visitation in 1985, it constituted 7 percent of the summer total sample population. Twice as much time was spent at Gatlinburg as at Cherokee. The distribution of respondents



Figure 1. Summary diagram of survey instruments

*Similar question in 1975 survey

**Similar question in 1956 and 1975 surveys

Source: 1985 GRSM Park Visitor Census questionnaire

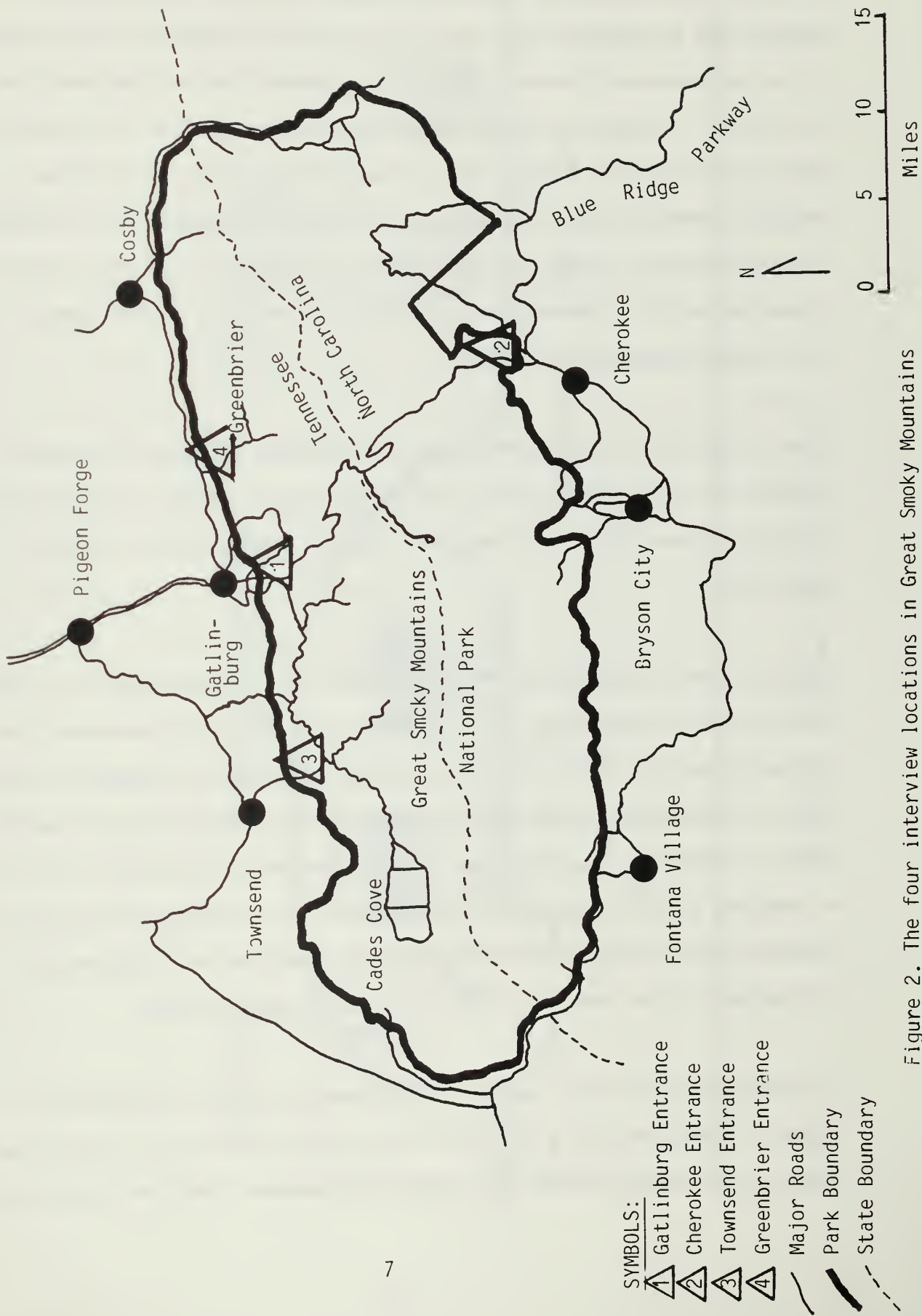


Figure 2. The four interview locations in Great Smoky Mountains National Park

among the sites by days of the week is shown in Table A-3, Appendix A.

Sampling was performed on all days of the week, with emphasis on the weekends at the three main entrances. This was in proportion to the increased traffic on weekends. A total of 82 sampling days was distributed over the summer and fall months of 1985. A total of 1,128 and 850 interviews were collected during the summer (June 24 to August 21) and fall (September 21 to November 2), respectively. Spring and winter months constituted only 29.7 percent of visitation in 1985. There were not sufficient resources to incorporate these off-season periods into the study.

Interviewing for the 1975 ARMS survey was performed from June 11 through November 16 (1974) and from April 20 through July 11 (1975). Interviewing of visitors for the 1956 Travel study was from the period of June 6 through August 28.

Sampling hours ranged from 9:00 a.m. to 7:00 p.m. The sampling distribution by hour of day is displayed in Table A-4 in Appendix A. Visitors were not sampled later than 7:00 p.m. because insufficient lighting created a safety hazard. The Gatlinburg station was closed during periods of heavy traffic caused by commuting employees from park headquarters. The effect of the lack of sampling late in the day was not measured. It is possible that groups spending a very full day exploring the park, resulting in an after-seven o'clock exit visit, were different from those exiting earlier.

All interviews were conducted at roadside survey stations as depicted in Figure 3. Once the survey station was set up for the day, each interviewer would stop a vehicle and begin the interview process. Once the questionnaire

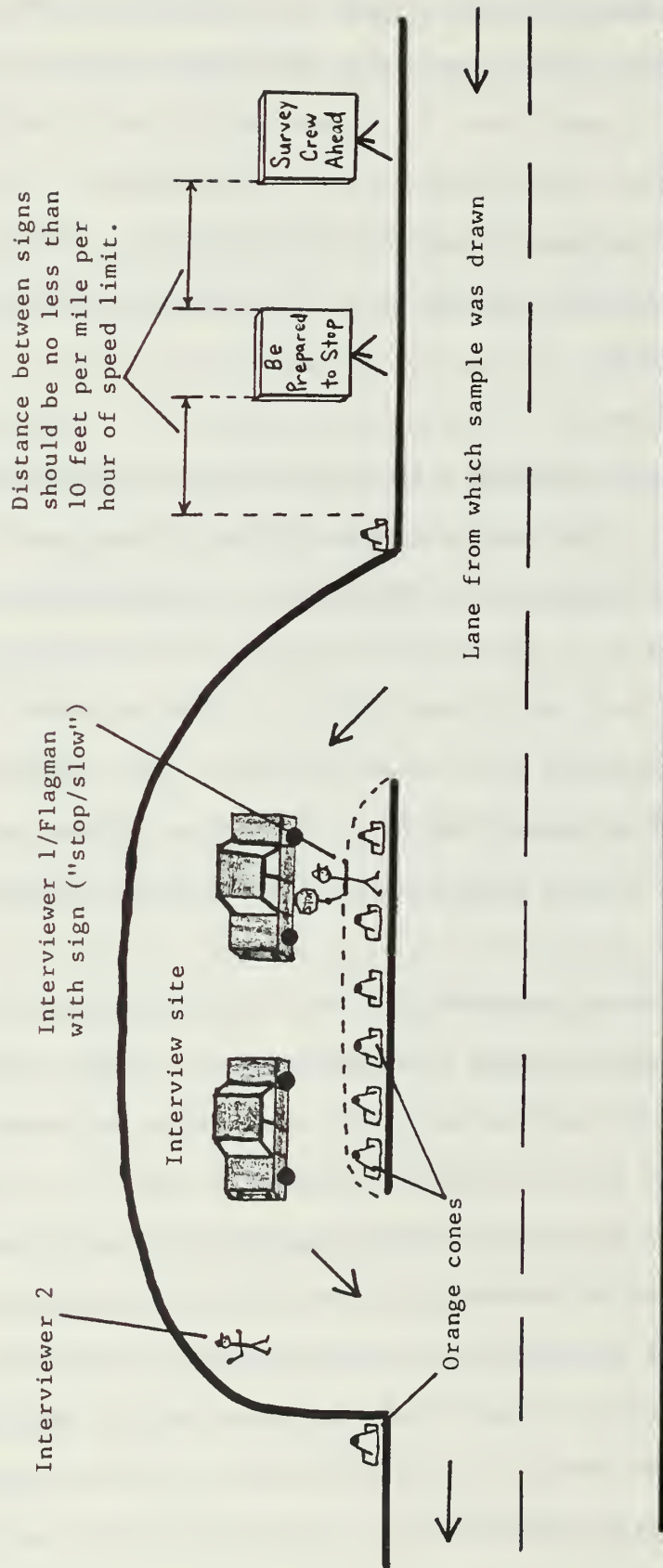


Figure 3. Roadside interviewing layout.

was completed and the interviewee left the sampling station, the next available vehicle was stopped and the process continued. Once a private vehicle was flagged down, the purpose of the survey was briefly explained and the passenger's cooperation was politely requested. The questionnaire was administered and data recorded by the researcher. The first question screened out people traveling on business. This constituted 2.8 percent of the 1,978 groups sampled.

The interviewer randomly selected a person to be interviewed from the passengers in the vehicle who were 16 years of age or over as follows. Passenger positions in the vehicle were assigned numbers, with the driver being listed as 1, with numbers assigned sequentially across the front seat and to back seats in the same order. A table of random numbers was used to select a respondent from the group members. This differed from the 1975 ARMS survey in which only drivers were interviewed. Thus, the 1985 sample was of individuals over 16 years of age, not of groups of visitors.

Before the actual questioning began, a single page, self-administered questionnaire was handed to another passenger in the vehicle who could fill out demographic information on the entire group and answer a question on vehicle type and recreational equipment on board while the interview took place. This allowed for time savings during the interview process. The questionnaire was administered with an interviewing time averaging 10 to 15 minutes. At the conclusion of the interview, the vehicle was directed off the interview site and merged into the flow of traffic and another vehicle was selected. Following a day of interviewing, the lead technician recorded several sampling observations to document the survey date, place, time period,

number of interviews completed, number of refusals, and the reason for each refusal. See Appendix C for the GRSM Visitor Survey Sampling Records data sheet.

An additional difference in sampling between the 1985 PVC and 1975 ARMS is that the 1975 exit interviews were restricted to nonlocal visitors. The 1985 PVC data is arrayed so that the ARMS definition of nonlocal can be isolated for direct data comparisons. Respondents residing in the following counties were considered to be local residents: Tennessee - Blount, Cocke, Knox, Monroe, and Sevier; North Carolina - Buncombe, Cherokee, Clay, Graham, Haywood, Jackson, Macon, and Swain. See Appendix A, Figure A-1, for the regional map of the area.

Response Rate

The refusal rate for the summer phase of the 1985 PVC survey was 6.3 percent, and for the fall phase, was 11.8 percent. Cumulatively, this is a 91.2 percent response rate for the entire survey period. No explanation is offered for the much higher refusal rate in the fall other than the possible influence of traffic congestion during the fall color season, making people impatient.

Confidence Interval

For the entire sample population, the sample size is sufficient to allow for precision of ± 2.5 percent when sampling at the 95 percent confidence interval ($p = .05$) (Yamane 1967). The precision is less as the sample is broken into subgroups such as seasons and place of residence.

Data Presentation

All the data from the 1985 survey has been analyzed for significance. Because the report presents several subsets of the 1985 data (nonlocal versus local, respondent versus respondent group, main versus finger entrances, summer versus fall) and compares the nonlocal respondent data set from 1985 with similarly collected data in 1975 and 1956, it was felt that presentation of statistical analysis for some sections of data and not others would further confuse the already complex data presentation. Therefore, statistical analysis is minimally presented in this report. A more refined statistical analysis of the 1985 data set will be presented in a series of journal articles under development at the time of completing this report.

The sample sizes for all the data sets for 1985, 1975 and 1956 and subsets of those data are displayed in Appendix A, Table A-1. The "n" values in subsequent tables that do not match those shown in Table A-1 occur due to incomplete questionnaires or to questions not posed to the entire sample population.

Data Management

All 1,978 completed questionnaires were coded and entered at the GRSM Science Division, during the winter months of 1985-1986. The county and state names on each questionnaire were converted to FIPS (Federal Information Processing Standards) codes in order to analyze visitor origin (U.S. Dept. of Commerce, National Bureau of Standards 1973). Data documentation and management was performed as described in MacKenzie's 1987 methods manual for data management. All data were proofed before loading into the mainframe computer at the University of Tennessee at Knoxville for analyses, using the Statistical

Analysis System (SAS). A copy of the data files and accompanying documentation can be made available on a loan basis from the Science Division, Great Smoky Mountains National Park.

Descriptive statistics, such as frequencies, means, and variances, were compiled for all variables. Additional statistical analyses were conducted to test for statistically significant relationships among variables.

Unfortunately, original data files for the 1975 ARMS and 1956 Travel studies are lost and apparently irretrievable. Steps have been taken to ensure this does not happen to the 1985 data set.

RESULTS

Visitor Characteristics

Demographic Profile

Ten-year trends in demographic characteristics of visitors to GRSM are portrayed in Table 1. These statistics represent the nonlocal use at entrance stations where 81 percent of the visitor traffic was counted in 1985, not use by locals or via the finger entrances. These trends are listed along with the national averages provided by the 1980 and 1970 censuses (Statistical Abstract of the United States 1985). The mean age of GRSM nonlocal visitors has risen slightly at the same rate as that of the general population. The mean age was 7 years older than the national average. A slight majority of visitors in 1985 were female. Visitor use is family oriented, reflected by the high rate of married respondents. The U.S Bureau of the Census shows a 6 percent drop in the marriage rate, which is not reflected in the park visitor statistics. Income trends are consistent with the census data. National park visitors throughout the system have always had higher income than the national average (USDI Heritage Conservation and Recreation Service 1979). Minority representation of the park clientele has declined 1 percent over the last decade, from 3 percent in 1975 to 2 percent in 1985. This occurs at a time of growth in minority representation in the nation's population. The percentage of visitors who have attended college dropped 5 percent at the same time the national average increased by the same amount. This represents a 10 percent swing and a trend opposite that of the nation as a whole. This shift also represents the greatest demographic change occurring in the park visitor population.

Table 1. Ten-year trends in demographic characteristics.

Characteristic Type	Year			
	1985 n=1,595	1980 Census	1975 n=5,243	1970 Census
Mean age	37*	30	35**	28
Percent male	48*	49	50**	49
Percent white	98	83	97	88
Percent married	86	66	87	72
Income \geq \$20,000 in current dollars (%)	82	52	41	25
Income \geq \$20,000 in constant dollars (%)***	31	24	26	19
Attended college (%)	46	16	51	11

*All car occupants were included in the analysis. Therefore, for these figures, n=5,107, which includes all the members of groups associated with the survey respondents.

**For these figures, n=14,568, which includes all the members of groups associated with the survey respondents.

***Constant dollars is based on the implicit price deflator for the gross national product using 1972 as the base year, where \$100 = \$100.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population from three main entrances.
1975 ARMS Visitor Survey - nonlocal sample population from three main entrances.
1985 Statistical Abstract of the United States Bureau of the Census.

Table 2 represents the demographic characteristics by nonlocal groups, season and type of entrance. The visitor population is significantly older in the fall season with a mean age over 13 years older than the summer population. The Greenbrier sample is younger, more likely to be male, less likely to be married, has a higher income, and is more likely to have attended college than visitors using the three main entrances.

The primary distinction between local and nonlocal patrons of the park was in income. The median income before taxes for nonlocal families was \$30,000 to \$35,000 per year, as opposed to \$20,000 to \$25,000 for local families. The mean number of vacation days per year for nonlocal visitors was 14.8 days, slightly greater than for local patrons.

Age and family associations are highly correlated with participation in various recreation activities (Kelly 1974 and 1983; Iso-Ahola 1980; Gordon et al. 1976). The age factor is the most dramatic demographic description of visitors to GRSM. The seasonal swing in age between summer and fall, for nonlocals, is detailed in Appendix A, Table A-5. The summer belongs to the youth, when one in four is a child and 63 percent are under age 40. The family vacations are traditionally taken when school is closed for the summer. By contrast, in the fall, almost half are over 50 years of age. The Greenbrier entrance is even more youth oriented than the population passing through the main entrances, where over 30 percent are 17 years old or younger.

A more detailed portrayal of the education levels for nonlocal visitors over 25 years of age is displayed in Appendix A, Table A-6. Over the 10-year

Table 2. Demographic characteristics by season and park entrance.

Characteristic Type	Season		
	Summer Three main entrances n=893	Summer Greenbrier entrance n=61	Fall Three Main entrances n=702
Mean age*	32.4	28.9	45.5
Percent male*	48.7	54.4	47.1
Percent white	97.8	98.4	98.4
Percent married	85.9	77.0	86.3
Income \geq \$20,000 in current dollars (%)	80.5	86.9	82.9
Income \geq \$20,000 in constant dollars (%)**	20.9	26.2	23.2
Attended college (%)	46.4	67.3	46.2

*All car occupants were included in the analysis. Therefore, for these figures, n=5,107, which includes all the members of groups associated with the survey respondents.

**Constant dollars is based on the implicit price deflator for the gross national product using 1972 as the base year, where \$100 = \$100.

period, similar declines occur in the percent of patrons that have graduated from high school and college.

A closer look at occupation by season in Appendix A, Table A-7, reveals a much greater number of blue collar occupations occurring in summer versus fall. The occupation categories were cited from Knudson, 1980. Over one-third of the summer respondents are in blue collar occupations. By contrast, in the fall over one in four are in white collar professions. Over 28 percent of the fall patrons are retired.

Finally, nonlocal visitor family income is divided into nine categories (Appendix A, Table A-8). More than one in five nonlocal groups to Greenbrier has a family income over \$50,000. The income levels are fairly evenly distributed between entrances and the summer and fall seasons.

Group Relationships

As depicted in Figure 4, almost one-half of the respondents were in a group of two people, and only 16.1 percent were in a group size greater than four people. It should be stated that four percent of the total groups sampled had a party size of only one person. This figure was much higher for local visitors, at 11 percent. Twelve percent of group members were friends as opposed to family members. This figure was identified in 1975 and 1985 for nonlocal respondents. The 1985 PVC local respondents were quite different, with one in four being a friend as opposed to a relative. This same ratio was found among Greenbrier groups interviewed. This is not to imply that relatives cannot be friends. Three of four group members were part of the respondent's immediate family. This did not change by season. Interestingly,

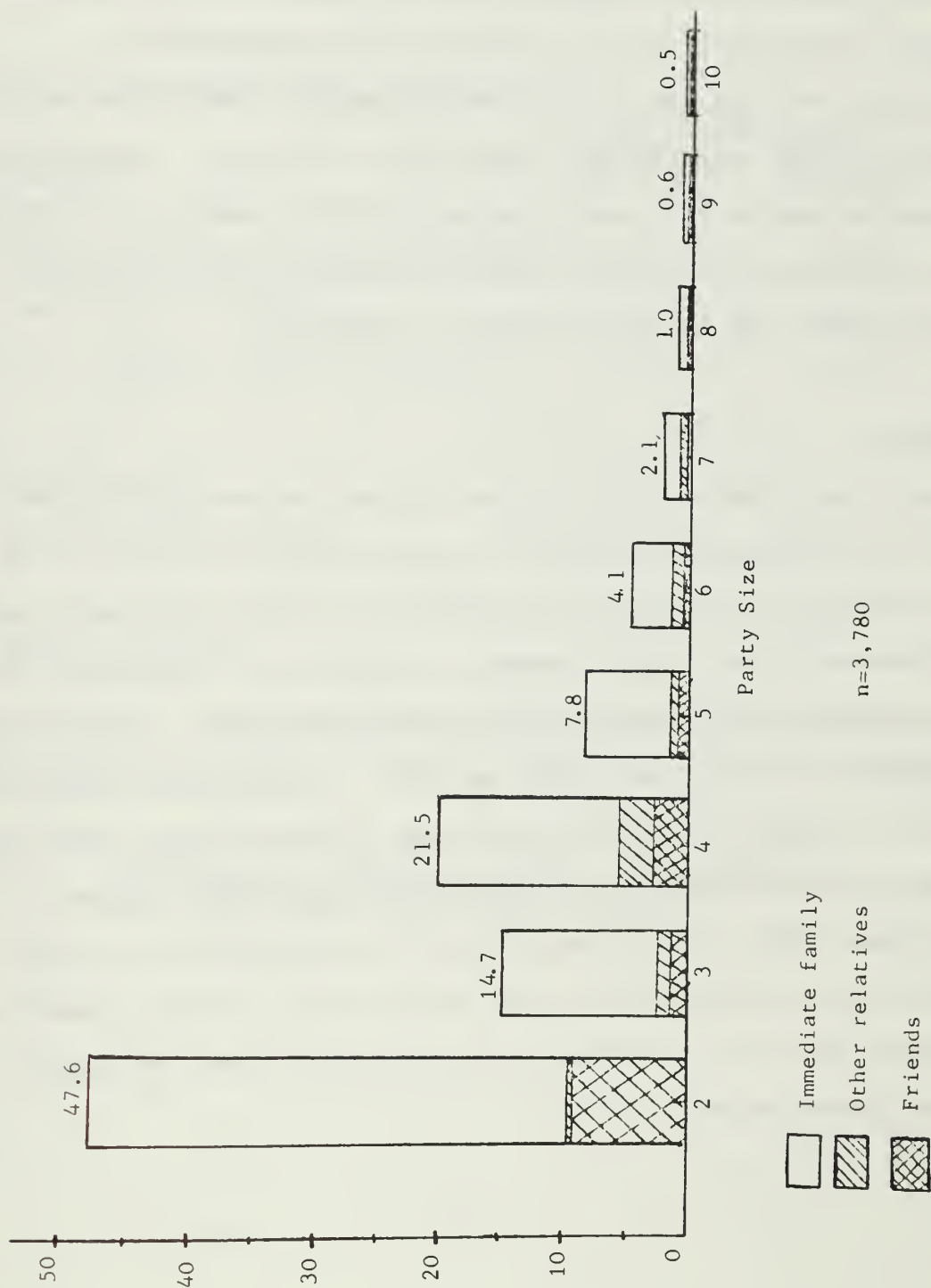


Figure 4. Distribution of party size and group association.

Source: 1985 GRSM Visitor Survey - total sample population (respondents and data on groups with which they were associated)

3.6 percent of the total sample population was in a group that had additional group members in another vehicle while on their trip.

Dramatic shifts have occurred in the makeup of the American family in the last 10 years, with many people staying single; delaying marriage; having fewer children; or becoming divorced, resulting in single-parent homes.

Nevertheless, visiting the park has remained largely a family experience. The family unit is the heart of the clientele group affiliation. Interestingly, the number of parties that bring along an "ex officio" member of the family, namely a family pet, has declined from 12 percent in 1975 to less than 4 percent in 1985. The majority of these pets were dogs.

Group Size

Mean party size recorded for the various studies by season are displayed in Table 3. The average group size for the entire 1985 data set is 3.2. The group size figure has a variance of 3.54, with a standard deviation of 1.88. The difference in party size by season is statistically significant at the .0001 confidence level using a t-test for independent means. The 1975 figures are somewhat less than those of 1956 and 1985. The consistency in group size visiting the park is different from the trend in household size, which dropped by 12 percent, from 3.14 in 1970 to 2.76 in 1980 (Statistical Abstract of the United States 1985). Since group size is key to an estimate of total park visitation, the estimate from the 1985 survey is also portrayed by month in Appendix A, Table A-9. The average group size peaks in July and steadily declines through October.

Table 3. Thirty-year trends in party size.

<u>Year/Season</u>	<u>Mean party size</u>	
	<u>Nonlocal population</u>	<u>Total population</u>
1985		
Summer (n=899) Three main entrances	3.6*	3.5*
Summer (n=61) Greenbrier	3.6	
Fall (n=706) Three main entrances	2.8*	2.6*
1975		
Summer (n=654)	3.0	
Fall (n=1,245)	2.5	
1956		
Summer (n=29,928)	3.7	

*Statistically significant at the .0001 confidence level using a t-test for independent means.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population
1975 GRSM Visitor Survey - nonlocal sample population
1956 Travel Study - total sample population

Trip to GRSM

Visitor Origin

The origin of visitors by state in 1985 is depicted in Figure 5. Dramatic shifts in visitor origin have occurred over the last 30 years. Comparing specific regions as defined by the U.S. Bureau of the Census, visitors to the park are most likely to come from the East South Central and South Atlantic regions of the country. This percentage of groups has changed significantly in the last 10 years and is portrayed in Table 4. Ten years ago, nearly 40 percent of visitors were from the East North Central region. That figure has dropped to 21 percent. Figure 6 shows the percentage change in total market share of the park visitation by state. The greatest gains in percent distribution have been from the states of Florida, Alabama, Mississippi, and Kentucky. The greatest losses in percent distribution have been from the states of Tennessee, North Carolina, Illinois, and Ohio. These losses are not in absolute terms, but in proportion to the total by state by year. The state of Florida, for instance, went from 4.9 percent of the total visitation in 1956 to a 10.8 percent share in 1985 or an increase of 122 percent. The gain by the Deep South states is dramatically portrayed using this statistic. According to the 1983 U.S. Bureau of the Census data, population growth in the southern states has risen from 62.8 million people in 1970 to 75.4 million people in 1980 (a 20 percent increase in population growth). This trend is reflected in the shift in visitor origin.

Of the total park visitation, 12.5 percent are local visitors living in the GRSM region, as defined in Figure A-1 of Appendix A. Of that percentage, 88.4 percent live in Tennessee and 11.6 percent are from North Carolina. Seasonal variation was minimal, with 87.6 percent nonlocal for summer and 87.3 percent

Table 4. Ten-year trends in region of residence.

	Year Percentage	
	1985	1975
<u>Region of residence</u>	<u>n = 1,677</u>	<u>n = 5,216</u>
*East North Central	21	38
+South Atlantic	34	25
^o East South Central	33	15
All other	12	22
TOTAL	100	100

*By U.S. Census definition, the East North Central region includes Ohio, Michigan, Indiana, Illinois, and Wisconsin.

+South Atlantic region includes North Carolina, South Carolina, Georgia, Florida, Virginia, West Virginia, and Maryland.

^oEast South Central region includes Tennessee, Kentucky, Alabama, and Mississippi.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population
1975 ARMS Visitor Survey - nonlocal sample population

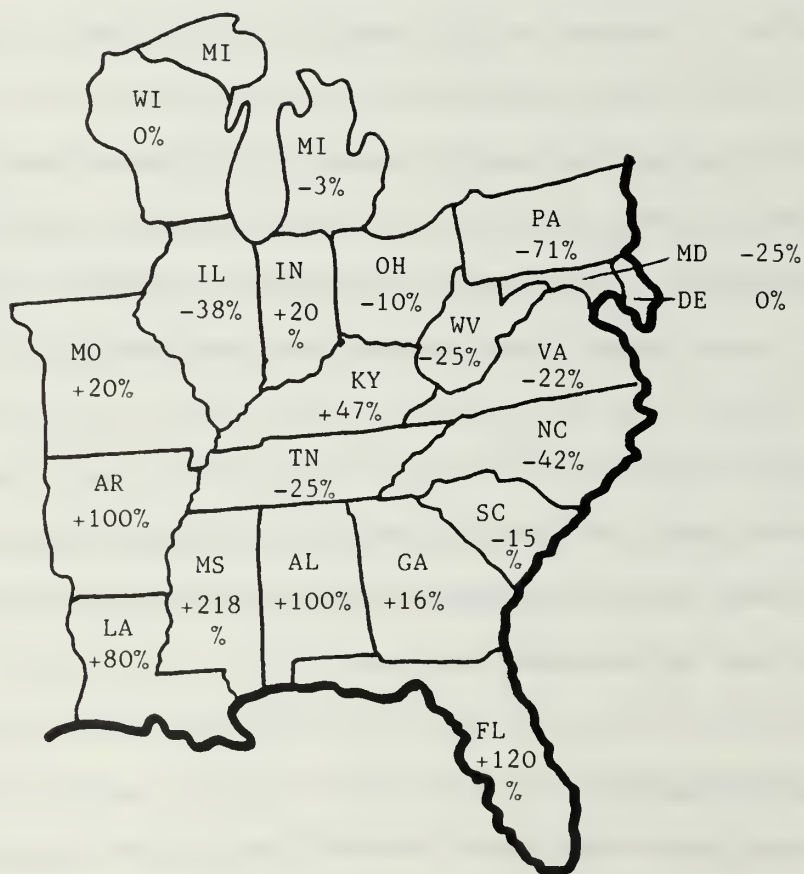


Figure 6. Thirty-year trends in state of origin by percent change in total market share.

Sources: 1985 GRSM Visitor Survey - total sample population
 1956 GRSM Travel Study - total sample population

for fall. The percent of nonlocal visitation recorded in the 1975 ARMS survey was 80 percent, representing a 7.5 percent rise in proportional use. This is to be expected, since the nonlocal rate of visitation is growing much more rapidly than local population growth.

In contrast, 34.4 percent of the visitation to Greenbrier is by local people. Additionally, 42.2 percent of the visitors to Greenbrier reside in Tennessee or North Carolina as opposed to 28.9 percent of those using the three main entrances. In 1956, this statistic for the park in general was 41.4 percent. Again, this trend is not necessarily a decline in absolute patronage by citizens of the adjacent states but rather an increased rate of participation from adjacent regions of the country experiencing rapid growth and development. Also, better highway systems have been developed since 1956.

Only 11 foreign groups of visitors were encountered in the survey, six of which were from Canada, two from England, and one each from Australia, Sweden, and Germany. More incidents may have been recorded if commercial buses would have been included in the sample strategy.

Familiarity with the Park

The 1982 National Recreation Survey revealed that between 25 and 37 million Americans have been to GRSM at some point in time. It has been visited by more Americans than any other National Park in the National Park System (Nationwide Recreation Survey 1982-1983). The vast majority of visitors to the park are familiar with it. Over 79 percent of summer nonlocal visitors had been to GRSM before. The fall visitors are slightly more likely to be familiar with the park, with 84 percent having been to the park before.

Greenbrier patrons were similarly familiar, with 82 percent having been to the park before. The 1975 ARMS survey recorded only a 58-percent rate of repeat visitors, so the rate of familiarity has changed dramatically over the last decade.

A total of 31.8 percent of respondents had visited GRSM at least one other time in the last year. The figure was double at Greenbrier, where 60 percent had been to the park at least one other time.

The average number of visits to the park within the previous year was 5.3. This average varied from 27.1 visits by locals to 1.4 visits by nonlocals. The Greenbrier respondents visited the park an average of 8.8 times in the last year. Seasonal differences consisted of an average of 5.8 visits in the past year for summer visitors and 4.8 visitors for fall visitors.

Respondents to the 1985 PVC survey were also asked the number of visits they had made to GRSM in the last 5 years. The average number of visits was 24.4. Greenbrier visitors were more frequent patrons, averaging 45.4 visits over the last 5 years. Seventy percent of the visitors had been to the park two or more times in the last 5 years. The average for local groups was 123.2 and 7.0 for nonlocals. The statistic of over 120 visits in 5 years by local visitors seems high and may reflect inflated recall bias. However, a high degree of familiarity does exist among the majority of park patrons.

Length of Stay

As displayed in Table 5, the average length of stay in the region has dropped 24.6 percent in the 10-year period, and number of days spent in the park has

dropped 12.0 percent in the last 10 years. Park visitors tend to spend more days in the park and the region (approximately one day longer) if they have visited the park before. The mean days spent in the region for visitors on their first visit during the summer was 3.5, opposed to 4.6 for visitors who have been to the park before. In the fall season, the mean days spent in the park for patrons on their first visit was 2.4 days, compared to 3.3 days for visitors that have been to the park before.

Table 5. Ten-year trends in length of stay.

	1985 n = 1,609	1975 n = 5,164
Mean number of days in region	4.16	5.52
Mean number of days in park	3.00	3.41

Sources: 1985 GRSM Visitor Survey - nonlocal sample population
1975 ARMS Visitor Survey - nonlocal sample population

Source of Information about Park

Nonlocal visitors rely on the park for information more than local patrons, as depicted in Appendix A, Table A-10. Local persons most mentioned "personal familiarity" as their source of information about the park. This data was also documented in two studies concerning the effectiveness of communication with park visitors conducted in 1983 (Peine et al. 1984; Burde and Curran 1985).

Type of Vehicle

Ten-year trends in type of vehicles used by park visitors are depicted in Appendix A, Table A-11. Vans may have replaced a significant percent of the

passenger car traffic in the last 10 years, but direct comparisons cannot be made due to questionnaire differences. There has been a slight drop in percentage of traffic associated with pickup campers and motor homes. The percent of nonlocal groups who rented a vehicle was 2.8.

Visitation Counts

Number of Visits

In 1985, there were 9.32 million visits recorded at GRSM, more than twice the number that visited any other national park in the country. Acadia National Park in Maine ranked second with 3.75 million visits. The 13-year trend of total visitation for GRSM from 1975 to 1987 is portrayed in Figure 7 (USDI, National Park Service Visitation Records 1987). As a point of reference, the number of visits in 1955 was 2.50 million and in 1965 there were 5.95 million visits. Included in the figure are time references to significant events which may have had some influence on GRSM visitation. These are intuitive perceptions only. The visitation drop from the period from 1978 to 1982 has been followed by five years of growth averaging 4.6 percent per year.

Park visitation by month for 1985 is shown in Appendix A, Table A-12. The PVC sampling period accounted for approximately 70 percent of the total park visitation for 1985.

Number of Visitors

The park visitation figures are based on traffic counters placed around the park. Each entry into the park is defined as a visit. Factors for average group size per vehicle of 3.1 during weekdays and 3.5 for weekend days are used to project an estimate of visits from the traffic counts.

1986

Less Foreign Travel
International Terrorism
1985-1988

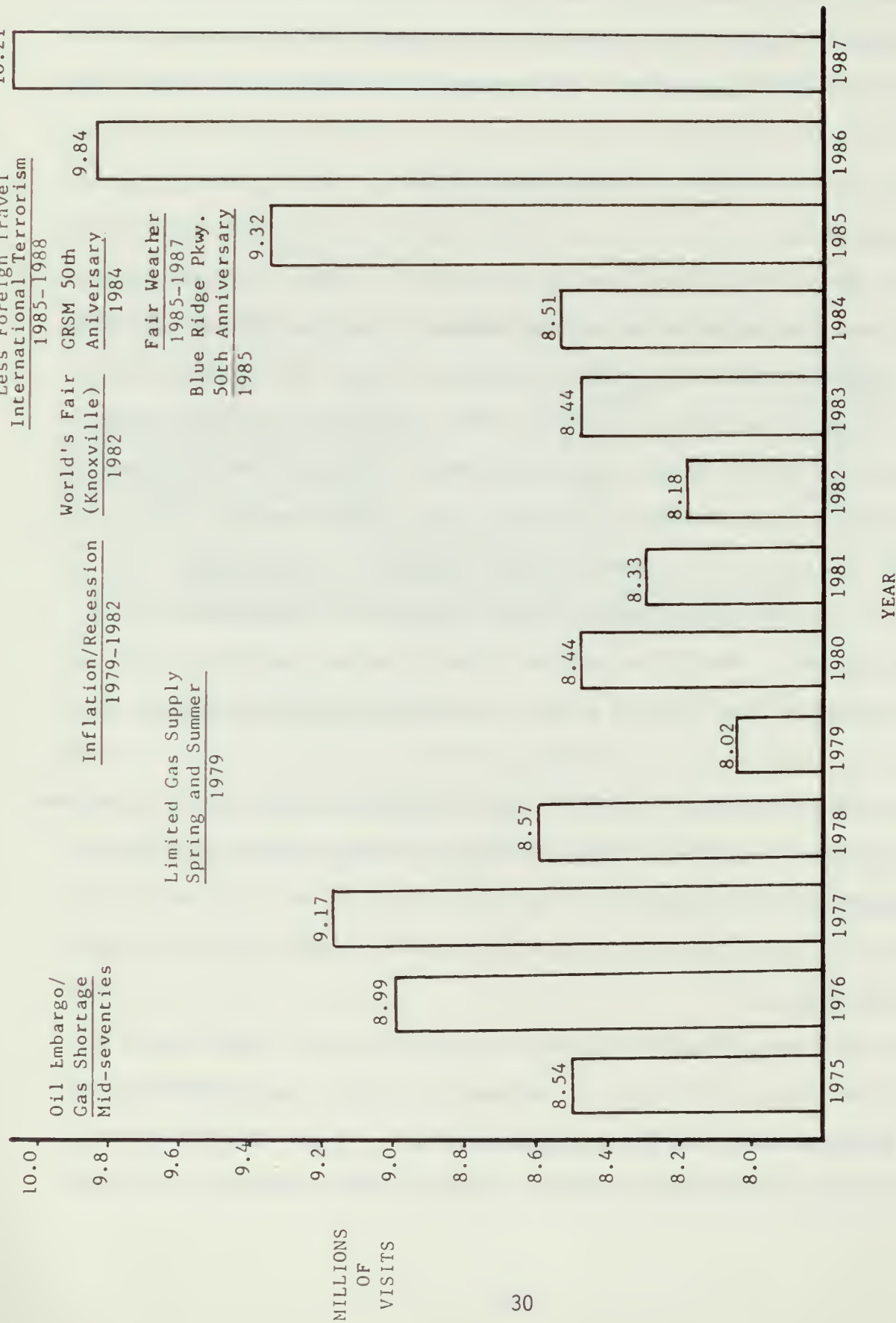
Oil Embargo/
Gas Shortage
Mid-seventies

World's Fair
(Knoxville)
1982

Inflation/Recession
1979-1982

Fair Weather
1985-1987
Blue Ridge Pkwy.
50th Anniversary
1985

Limited Gas Supply
Spring and Summer
1979



YEAR

Figure 7. Park visitation from 1975 to 1987.

Source: GRSM visitor use records

In order to convert the estimated number of visits to an estimated number of individuals, the following formula was applied:

$$NI = \frac{(V/Y) \times L}{(V/D)_1 \times (D/T)_1 \times (T/Y)_1} + \frac{(V/Y) \times NL}{(V/D)_{n1} \times (D/T)_{n1} \times (T/Y)_{n1}}$$

Where NI = Total number of individuals using the park per year
V/Y = Number of visits to park per year
L = Percentage of visitors that are locals
(V/D)₁ = Average number of visits per day by locals
(D/T)₁ = Average number of days per trip by locals
(T/Y)₁ = Average number of trips per year by locals
NL = Percentage of visitors that are nonlocals
(V/D)_{n1} = Average number of visits per day by nonlocals
(D/T)_{n1} = Average number of days per trip by nonlocals
(T/Y)_{n1} = Average number of trips per year by nonlocals

$$NI = \frac{9,319,300 \times .125}{1.08 \times 1.32 \times 27.11} + \frac{9,319,300 \times .875}{1.13 \times 3.00 \times 1.44}$$

$$= 30,140 \text{ local visitors} + 1,670,981 \text{ nonlocal visitors}$$

$$NI \approx 1,700,000 \text{ visitors in 1985}$$

In order to estimate the number of groups visiting the park annually, the following formula was used:

$$NG = \frac{NI_1}{I/G_1} + \frac{NI_{n1}}{I/G_{n1}}$$

Where NG = Total number of groups using the park per year
NI₁ = Total number of local individuals using the park per year
I/G₁ = Average number of local individuals per group
NI_{n1} = Total number of nonlocal individuals using the park per year
I/G_{n1} = Average number of nonlocal individuals per group

$$NG = \frac{30,140}{3.14} + \frac{1,670,981}{3.25}$$

$$= 9,599 \text{ local groups} + 514,148 \text{ nonlocal groups}$$

$$NG \approx 524,000 \text{ groups in 1985}$$

An underlying assumption concerning these figures is that Greenbrier is representative of all finger entrances so that visitors to all the outlying finger entrances had approximately the same average number of visits per day, days per trip, and trips per year. The Greenbrier data set compared to the three main entrances, as shown in Appendix A. Table A-13, is consistently greater for these three variables. The net effect is a higher factor in the denominator of the formula than that from the main entrances when estimating number of visitors. The implication is that for 19 percent of the total visitation associated with finger entrances, the actual number of individuals and groups is lower than that shown in the above mentioned formulas.

Another underlying assumption is that all the factors in the formula remain constant throughout the year. The survey was conducted during the months of June through October when 70 percent of the park visitation occurs as documented in Table A-12. The factor most likely to change during the "off" season is the ratio of local versus nonlocal visitors to the park.

This information has important management implications concerning identification of the park clientele. The figure of 9.3 million visits for 1985 has been frequently misinterpreted. The distinction between visitors and visits is often missed. The 9.3 million visits recorded in 1985 by the National Park Service are in reality less than 2 million people. Since people invariably function in a group context when visiting the park, the number of groups is an important factor to track as well. Since visitors unfamiliar with the park are most likely to use certain types of park services, the number of groups on their first trip, which in 1985 totaled approximately

100,000, are of particular concern to park management. The route patterns and use of visitor services by these first-time patrons are dealt with in subsequent sections of this report.

Route Patterns

Routes

The frequency of use of the nine entrance/exit patterns from the three main park entrances are displayed in Table 6. Trip combinations that entail a trans-mountain drive through the park include routes numbered 2, 3, 8, and 9 in the table. This represents 38 percent of the visitors who drive the trans-mountain road (U.S. Route 441). Sixty-one percent of the trips include Gatlinburg as an entrance and/or exit. Visitor characteristics among the nine trip routes are compared in Appendix A, Table A-14. Respondents on the Gatlinburg-Townsend route had the highest percent local as well as the highest rate of park visitation. Visitors on the Cherokee-Cherokee trip route were in the park longer than any other route (5.9 hours), while visitors using the Cherokee-Gatlinburg route were in the park for only 3.0 hours.

Stop Locations

On an average, visitors stop only 1.7 times during a daily park visit. One in six groups drive through the park without stopping. Of all the visitor stop locations recorded in the 1985 survey, 97 percent were in front country areas. Additionally, 95 percent of the stops were at some man-made facility such as a visitor center, picnic ground, historic structure, or scenic overlook. Only 5 percent of all the stops mentioned by respondents were at areas where visitors more directly interact with the natural resources of the park.

Table 6. Frequency of use of the nine most popular trip routes.

<u>Entrance/exit use pattern</u>	<u>Three main entrances Percentage n=1,839</u>
1. Gatlinburg to Gatlinburg	25%
2. Gatlinburg to Cherokee	19
3. Cherokee to Gatlinburg	17
4. Townsend to Townsend	13
5. Gatlinburg to Townsend	10
6. Townsend to Gatlinburg	8
7. Cherokee to Cherokee	6
8. Cherokee to Townsend	1
9. Townsend to Cherokee	<u>1</u>
TOTAL	100%

Source: 1985 GRSM Visitor Survey - total sample population.

In Table 7, the frequencies of the top 20 stop locations are listed. Over one-fourth of park visitors go to Cades Cove. Newfound Gap is stopped at by 20 percent of park visitors, even though 38 percent of park visitors drive over Newfound Gap via U.S. Route 441. One-third of the visitors stop at one or more of the three main visitor centers, and 7 percent of the park clientele make use of at least one of the nine picnic areas.

Visitor Time Budget

Examination of travel patterns, the sequence of stop locations, activities pursued at stops, and the time spent at the stops provide a wealth of information as to how and when the park natural resources and visitor facilities are being used by the public. Possibly the most revealing descriptive statistic of all concerns time budget--how and where people spend their time during their park visit. A summary of time budget data is portrayed in Table 8. People spend more time in the park and region in the summer than fall. The duration of their day's visit is one hour shorter in the fall than the summer, and it is one hour shorter for nonlocals versus locals. The percentage of visitors not stopping is greater in the fall than summer and for local versus nonlocal visitors.

Possibly the most dramatic trend of all those portrayed in this report is the sharp decrease in the amount of days spent in the region and park per visit. The regional number of days has dropped 24.6 percent, and the in-park number of days has dropped 12.0 percent. This trend may be related to the shift in visitor origin away from the Midwest to the Southern Tier states. Also, national trend data shows a trend away from the long-term marathon family vacation to more 3- to 4-day regional excursions (1986 Nationwide Travel

Table 7. Frequency of the top 20 stop locations.

<u>Rank</u>	<u>Stop Location</u>	<u>Percentage n=1,922</u>
1.	Cades Cove	26.8
2.	Newfound Gap	20.1
3.	Sugarlands Visitor Center	18.7
4.	Pull-offs (general)	14.9
5.	Clingmans Dome	11.7
6.	Oconaluftee Visitor Center	10.0
7.	Elkmont campground	7.0
8.	Chimney Tops. lookout	5.2
9.	Cable Mill Visitor Center	5.0
10.	Greenbrier Cove	4.6
11.	Townsend "Y"	4.1
12.	Mingus Mill	3.7
13.	Smokemont campground	3.7
14.	Chimneys picnic area	3.7
15.	Little Pigeon River pull-offs	3.7
16.	Laurel Falls	3.3
17.	Primitive Baptist Church	2.5
18.	Little River pull-offs	2.2
19.	Metcalf Bottoms picnic area	1.8
20.	Collins Creek picnic area	1.4

Source: 1985 GRSM Visitor Survey - total sample population.

Table 8. Time budget analysis of visitor experience.

Table 8. Time budget analysis of visitor experience.						
Time Factors	YEAR/SEASON					1975 Nonlocal sample n=5,164
	1985		1985		1985 Three main entrances Local sample n=172	
	Summer Three main entrances n=830	Fall Three main entrances n=397	Summer Greenbrier n=73	Nonlocal sample n=1,265		
Mean # days in region	4.26	3.96	6.41	4.16	NA	5.52
Mean # days in park	3.06	2.89	6.11	3.00	1.32	3.41
Mean duration of day's visit (hrs.)	5.9	4.9	6.3	5.5	6.5	*NA
Mean # stops/day	1.9	1.5	1.8	1.7	1.8	*NA
% Visitors not stopping	14	19	13	10	16	*19
Mean duration/stop (mins)	26	25	33	25	27	*NA
% Stop time/day	14	13	16	13	12	*NA
% of stop time at major facilities	19.2	19.3	13.6	15.8	19.4	*NA
% of stop time at resource areas	80.6	80.7	85.6	84.2	80.4	*NA

*NA - This trip descriptor was not a category during the 1975 survey.

Sources: 1985 GRSM Visitor Survey - total sample population
1975 ARMS Visitor Survey - nonlocal sample population

Survey).

For the vast majority of people, the visit to the Great Smoky Mountains is a windshield experience. The average visitor stops less than two times. Nearly one out of six groups never turn their engines off during their visit to the park, which compares well with the 1975 figure of 19 percent. The ratio of driving to stopping time is 7:1 for visitors using the three main entrances. For every hour in the car, only 8 minutes are dedicated to activity outside the vehicle.

It is informative to know how much time is spent at various stops. Table 9 shows the top 20 stop locations rank-ordered by duration. Park visitors spent over an hour and a half at pull-offs along the Little Pigeon River, spent about an hour at the picnic areas, about half an hour at visitor centers, and an average of only 8 minutes at the miscellaneous scenic pull-offs. Table A-15 portrays length of stay at the three visitor centers. Almost half of the groups to Sugarlands Visitor Center stayed 15 minutes or less. On crowded summer days, these people staying just a few minutes may not be adequately served due to park staff inaccessibility. In contrast, over 75 percent of groups to Cable Mill Visitor Center stayed 16 minutes or longer. Nearly one in three groups spent a half hour or more at Cable Mill and Oconaluftee Visitor Centers. These numbers suggest that groups attending these sites are interested in the cultural aspects of pioneer homesteads.

Activity Patterns

Attempting to define the essence of the visitor experience is a most challenging task. Compartmentalizing the experience into activity components

Table 9. Top 20 stop locations rank ordered by average duration

<u>Rank</u>	<u>Stop Location</u>	<u>Average duration of stops (minutes)</u>
1.	Little Pigeon River pull-offs	91
2.	Laurel Falls	75
3.	Townsend "Y"	74
4.	Cades Cove	62
5.	Chimneys picnic area	60
6.	Collins Creek picnic area	60
7.	Metcalf Bottoms picnic area	50
8.	Quiet walkways	46
9.	Clingmans Dome	44
10.	Greenbrier Cove	44
11.	The Sinks	37
12.	Cable Mill Visitor Center	32
13.	Oconaluftee Visitor Center	31
14.	Chimney Tops lookout	29
15.	Sugarlands Visitor Center	27
16.	Mingus Mill	26
17.	Little River pull-offs	20
18.	Primitive Baptist Church	20
19.	Newfound Gap	19
20.	Pull-offs (general)	8

Source: 1985 GRSM Visitor Survey - total sample population

is invariably misleading. Table 10 lists the participation rates for 20 recreational activities that people are involved in while experiencing the park. The activity participation rates listed in Table 10 can be misleading because of the apparent low rates of involvement. It must be clarified that this question in the survey instrument (question no. 13 in Appendix B) was an open-ended question. This means that the various types of activities were not read off to the respondent, but recorded in terms of the activities the respondent recalled participating in. Nevertheless, the ranking of the activities provides useful information to park management.

Because the vast majority are "windshield" visitors, the highest participation rates are with those activities dealing with viewing the landscape. Over 70 percent of these activities are pursued within a stone's throw of a roadway. Activity participation with the 10 most popular stop locations is displayed in Table A-16. Again, the primary activities are associated with the passive viewing of the landscape. One in four visitors to Sugarlands Visitor Center viewed the exhibits. Slightly more than 1 in 10 talked to a ranger there.

Approximately one-fourth of the nonlocal sample population camped the night before the interview. In Appendix A, Table A-22, 28 percent of summer nonlocal groups reported that they stayed at a campsite the night before their interview, compared to 24 percent in 1975. Of that 28 percent in 1985, 13 percent camped in the park and 15 percent, outside. In 1975, the 24 percent that reported camping the night before had 11 percent camping inside the park and 13 percent outside.

Table 10. Participation rates for the top 20 recreational activities.

<u>Rank</u>	<u>Recreational Activity</u>	<u>Percentage n=7,812</u>
1.	View scenery	23.3
2.	Photography	11.5
3.	View historic buildings	8.0
4.	View wildflowers and plants	6.4
5.	Other	5.7
6.	Walk	5.3
7.	View wildlife	5.0
8.	See exhibit	4.5
9.	Restrooms	4.1
10.	Information	4.0
11.	Picnic	3.4
12.	Day hike	1.7
13.	Auto camp	1.6
14.	Purchase books and materials	1.5
15.	Water/swim	1.5
16.	View waterfall	1.3
17.	View film	1.3
18.	Tube	0.6
19.	Fish	0.4
20.	Horseback ride	0.3

The value of "n" listed here refers to the number of stop locations reported by the total population of 1985 respondents.

Source: 1985 GRSM Visitor Survey - total sample population.

Type of Recreational Equipment

As depicted in Table A-17, three out of four nonlocal groups had cameras. A large percentage (42.3 percent) of local groups came to the park without any recreational equipment. A significant number of nonlocal groups had backpacks (7.1 percent), fishing gear (9.6 percent), and swimming gear (15.6 percent). A disparity occurs when comparing activity participation rates as displayed in Table 10 and the percentage of groups having various types of recreational equipment as displayed in Table A-17. This may be attributed to the fact that the equipment data referred to the entire group with which the respondent was associated whereas the activities referred to the respondent only. A group of 6 people may have had some fishing gear in their vehicle, for instance, but the respondent interviewed may not have been the member of the group using it.

Use of Park Services

Ranger Contact

Over 26 percent of nonlocal groups reported that they had talked to a ranger at some point during their visit, and over 21 percent of local groups likewise made contact with a ranger. This figure is quite extraordinary since the park does not have entrance stations to collect fees. As depicted in Table 11, visitor centers are the main contact point, particularly in the fall, when 82 percent of the visitor contacts are made at visitor centers. (Refer to Appendix A, Table A-18). Characteristics of visitors who talked to a ranger are portrayed in Table 12. First-time visitors are more likely to talk to a ranger, nonlocals rather than locals, and people staying longer. One in four campers talked to a ranger. People making ranger contact were much more likely to be aware of interpretive programs than those not visiting with a ranger.

Table 11. Location of ranger contact.

<u>Location</u>	<u>Percentage n=221</u>
Sugarlands Visitor Center	20.0
Cades Cove	20.0
Elkmont campground	9.5
Oconaluftee Visitor Center	8.6
Clingmans Dome	7.6
Cable Mill Visitor Center	6.7
Smokemont campground	4.8
Chimney Tops picnic area	2.9
Pull-offs	2.9
Newfound Gap	2.0
Abrams Falls	2.0
Other	<u>13.0</u>
TOTAL	100.0

Source: 1985 GRSM Visitor Survey -
total sample population

Table 12. Characteristics of visitors who talked to a ranger.

<u>Visitor Characteristic</u>	<u>Response</u>	
	<u>Yes</u> <u>n=484</u>	<u>No</u> <u>n=1,438</u>
Mean age*	35.2	37.1
Mean party size*	3.3	3.2
Percent on first visit	21.7	16.6
Percent male	49.7	48.5
Percent white	97.7	98.2
Percent nonlocal	89.9	86.7
Mean number days in park	3.8	2.6
Mean number days in region	4.8	3.4
Percent attended college	57.3	44.0
Income \geq \$20,000 (%)	82.1	88.0
Percent that camped in park	25.3	7.8
Mean numbers of nights in park	4.2	4.0
Percent aware of interpretive programs in park	60.5	42.4

*All car occupants were considered in the analysis. Therefore, for these figures, n = 5,713, which includes all the members of groups associated with the survey respondents.

Source: 1985 GRSM Visitor Survey - total sample population

Interpretive Services

The visitor services provided at GRSM are quite extensive. During the summer of 1985, there were 123 scheduled ranger-led programs conducted per week at 45 locations. During the fall months of 1985, this service was trimmed to 42 programs staged at 15 locations. In addition, the three visitor centers offer displays of natural and cultural resources and information brochures, books, and pictures. There were 12 self-guided nature walks and 35 wayside interpretive signs in the park in 1985. The most popular locations to pursue the various visitor service activities are displayed in Appendix A, Table A-19. The Sugarlands Visitor Center is clearly the information center for the park visitor. The most frequently mentioned location for ranger walks was Cable Mill. Newfound Gap is a frequently mentioned restroom stop.

On the average, interpretive services were used by 24.7 percent of the visiting public. A comparison of respondents who participated in visitor services versus those who did not are portrayed in Appendix A, Table A-20. This table reveals that there are no meaningful differences that exist between people who participated in visitor services versus those who did not. It is interesting to note that visitors who did not participate in a visitor service were more aware that interpretive programs existed in the park.

A majority (53 percent) of the visitors who did not attend interpretive programs were not aware of their existence. Of the nonattendees that were aware of the availability of the programs, a lack of time was the most frequently mentioned reason for nonattendance, as displayed in Table 13. This is similar to the results found in an earlier study of communications in the park (Peine, et al. 1984). Seasonal differences in response occurred. The summer visitors were much more likely to cite "inconvenient time" as a reason.

Fall visitors were much more likely to indicate a lack of interest. This could be a factor associated with group dynamics and/or age. The management implication is that a significant unmet market exists for interpretive services, particularly during the summer months.

Table 13. Reasons for not using interpretive services.

	Percentage			
	Summer 1985 <u>n=511</u>	Fall 1985 <u>n=355</u>	Local Sample <u>n=138</u>	Nonlocal Sample <u>n=723</u>
<u>Reasons</u>				
Not enough time	38.5	36.0	39.2	36.4
Other	27.8	30.8	23.1	30.3
No interest	13.9	27.3	24.7	18.2
Inconvenient time	<u>19.8</u>	<u>5.9</u>	<u>13.0</u>	<u>15.1</u>
TOTALS	100.0	100.0	100.0	100.0

Source: 1985 GRSM Visitor Survey - total sample population

Mowing Policy

A question on mowing policy was included in the survey in order to test response to an attitude question that was solicited from the general park population via the PVC instrument, and from visitors to the Sugarlands Visitor Center solicited from a touch screen computer. Question No. 18 of the PVC, as displayed in Appendix B, was as follows: Should roadsides in the park be mowed several times a year or be allowed to grow up with wildflowers and grasses, being mowed only once a year? Most respondents (66.6 percent) selected the option to mow once a year as opposed to only 28.8 percent selecting the "mow several times a year" option. Only 4.8 percent had no opinion.

Economic Impact

Nonlocal Visitor Expenditures

Nonlocal park visitors were asked how much money their group spent on the previous day (refer to question no. 17 in Appendix B). Also, the expenditure type, the amount, and the location of each expenditure was recorded.

Interestingly, less than 8 percent of all reported expenditures were made outside of the GRSM region as defined in Appendix A, Figure A-1. It should be noted that for the purpose of this study, only expenditures made within the GRSM region were analyzed. They are reported here in order to determine the economic impact on the region by nonlocal GRSM visitors.

Nonlocal park visitors spend a considerable amount of money on their visit to the park and surrounding environs. An average of \$101.75 was spent in the region per day by nonlocal groups. This varied somewhat seasonally, as depicted in Appendix A, Table A-21. Summer visitors spent slightly more per group but less per person than fall visitors. This may be due to the fact that summer groups were larger but were more likely to have children with them. Visitors using the Greenbrier entrance spent considerably less than visitors using the major entrances. This average expenditure may appear low but it incorporated the 32.8 percent of the Greenbrier nonlocal sample population that were camping.

Projecting the expenditure figures for the nonlocal visiting public to the park must be qualified by the assumptions that 1) the percentage of locals to nonlocals remains constant during off-season periods not sampled by the survey and 2) that the expenditure rates of nonlocals are applicable to the off-season periods not sampled by the survey. These periods account for 30

percent of the total visitation (see Table A-12). A third assumption is that the reduced expenditure rate recorded at Greenbrier is representative of all the finger entrances to the park.

There is a likelihood that during the off-season the percentage of total visitors that are locals increase and the amount of expenditures per group may be less due to reduced hotel and motel rates.

Given these assumptions, the total expenditures by nonlocal park visitors during their stay in the region may be estimated as follows:

$$TE = (E_m \times G_m \times D_m) + (E_f \times G_f \times D_f)$$

Where TE = total nonlocal park visitor expenditures to region

E = average expenditure per day per nonlocal group

G = number of nonlocal groups per year (514,148 groups)

D = average number of days in region during visit by nonlocals

m = visitor groups using three main entrances of Gatlinburg, Cherokee, and Townsend (81 percent of nonlocal groups)

f = visitor groups using all outlying finger entrances to the park, such as Greenbrier (19 percent of nonlocal groups)

$$TE = (102 \times 416,460 \times 4.2) + (83 \times 97,688 \times 6.4)$$

$$= (178,411,464.00) + (51,891,865.00)$$

$$TE \approx \$230,303,000$$

The expenditure estimate of approximately \$230 million represents out-of-pocket costs. The percentage of these dollars projected to be generated in the off-season is approximately \$69 million. Considering the above stated assumptions, and the possibility that there may be an overestimate of

expenditures in the off-season, total out-of-pocket expenditures may be overestimated by as much as 5 percent. There is no way of knowing this without collecting comparable data during the off-season.

The overall impact on the economics of the local communities is, in fact, much greater due to the turnover of a portion of these funds within the communities. The most frequently mentioned expenditures in the summer season, as depicted in Appendix A, Table A-22, are for restaurants (72 percent) and hotel/motel accommodations (60 percent). In 1975, 55 percent reported spending money on a hotel/motel the night before the interview. Both of these expenditures involve very labor intensive services, so that visitor expenditures "roll over" several times within the community. A conservative multiplier effect which can be applied to these expenditure estimates is 1.5 (Walsh 1986). Therefore, the net effect of visitor expenditures on the economy of communities neighboring the park may, in fact, exceed a third of a billion dollars.

The distribution of an average nonlocal visitor dollar among categories is displayed in Figure 8. Food and lodging constitute 63 percent of the visitor dollar with the majority of the remainder being spent (23 cents worth) on gifts.

The range of expenditures was quite significant, as displayed in Table A-23. The gifts range was significant enough to greatly inflate the mean. The maximum group expenditure on a single gift item was \$3,000 for a grandfather clock. The most paid for a motel was \$345 per group per day, but that was probably more a reflection of group size than of room rate.

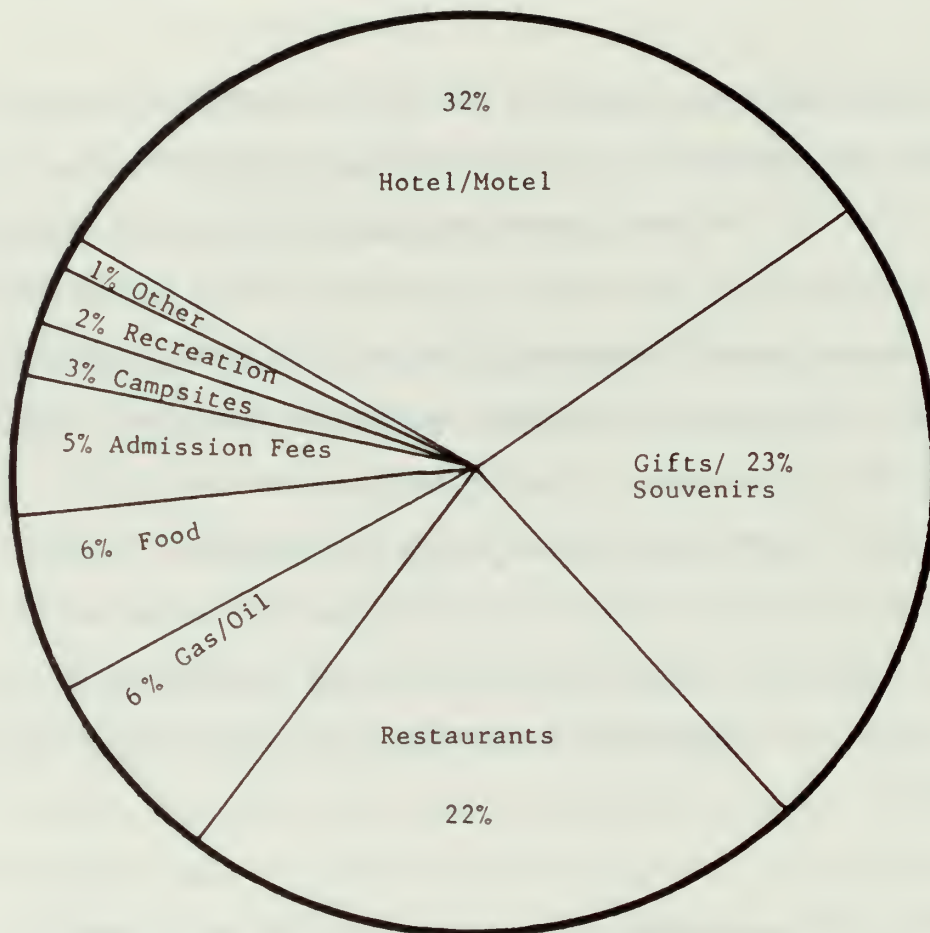


Figure 8. Percentage of total group expenditures in GRSM region by expenditure type.

Source: 1985 GRSM Visitor Survey - nonlocal sample population.

Trends in visitor expenditures are displayed in Table 14. Costs in the last 10 years have more than doubled for all items except for gas/oil. The nonlocal Greenbrier patrons spent more for food than for restaurants, reflecting their greater likelihood of picnicking. The average price of a motel has increased more than three times in the 29-year time span based on constant dollars. It is interesting to compare today's prices versus those in 1956 when a campsite average was just over \$1, a motel less than \$5, and gas under \$2.50 per day.

The disparity in expenditure figures over time is put in more realistic perspective in Appendix A, Table A-24, where all costs are displayed in constant dollars, using the 1972 dollar value as a base of reference (Business Statistics 1982). This portrayal clearly indicates a significant increase in the expenditure rate for most items. Gift expenditures have risen dramatically. The expenditure on a motel/hotel has increased in the last 10 years. The expenditure for gas and oil is slightly less than it was 10 years ago, which presumably reflects the more fuel-efficient vehicles of today. Fees for recreation are down markedly, possibly reflecting a change in terminology rather than behavior. The rates are virtually identical over 10 years if you combine the categories of recreation and admission fees.

The location of the previous night's lodging by community is portrayed in Appendix A, Table A-25. Gatlinburg is by far the most popular community. Over 44 percent of the respondents spent the previous night there. Pigeon Forge received just one-half as many responses and, in turn, Cherokee received one-half as many responses as Pigeon Forge. The distribution of expenses by community is shown in Appendix A, Table A-26. The hotel/motel cost is

Table 14. Average* group expenditures per day in current dollars.

<u>Expenditure Type</u>	Summer 1985 <u>n=444</u>	Fall 1985 <u>n=417</u>	Greenbrier 1985 <u>n=46</u>	ARMS 1975 <u>n=540</u>	Travel 1956 <u>n=29,928</u>
Restaurant	\$33.05	\$30.25	\$25.05	NA**	
Food	14.56	15.27	26.98	\$16.85	\$6.05
Gas/oil	18.09	18.66	19.40	10.54	2.47
Hotel/motel	55.67	50.62	57.88	21.84	4.68
Campsite	10.71	10.36	11.10	4.67	1.04
Gifts/souvenirs	48.13	54.75	56.29	16.95	NA
Admission fees	28.18	20.10	10.90	8.86	NA
Recreation	18.40	20.06	23.80	8.80	NA
Entertainment	NA	NA	NA	NA	1.21
Other	24.69	28.06	--	NA	2.77

*Mean values do not include zero response.

**NA - This expenditure type was not a category during that survey.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population
1975 ARMS Visitor Survey - nonlocal sample population
1956 Travel Study - total sample population

inversely proportional to the distance from the park in Sevier County, Tennessee, which directly reflects the fact that the park is the primary tourist attraction.

CONCLUSIONS

In the day to day pressures of operating a major park, there can be a tendency to take the visitors and their utilization of park resources, facilities, and services somewhat for granted. Managers are aware in a general sense of who the visitors are and of their use patterns in the park. Closer scrutiny of those dynamics, however, provides valuable insight into how best to provide for the optimum visitor experience and anticipate the inevitable changes that occur over time with visitors and their relationship with park resources.

In the case of the GRSM clientele, these dynamics are described in statistics compiled for this report. The trend data assembled defines dramatic shifts in visitor origin, use patterns, and expenditures, all of which have important implications for management. Shifts in park clientele mirror national travel trends. Visitor origin has shifted from the Midwest states to the Deep South states reflecting the rapid population growth in the Southern Tier states. The time spent per trip has declined sharply both in the park and the surrounding region. The implication is that visitors are spending less and less time exploring the park in depth. For the vast majority, the park visit is largely a windshield and facility experience. Many things have been tried by management to disperse use and encourage more interaction with park resources but this basic challenge still remains.

This situation is exacerbated by the rapid growth of the tourism industry adjacent to the park. The greatest increase in expenditures by nonlocal park visitors during their visit to the region in the last 10 years was in the purchase of admission fees and gifts and souvenirs. Revenues in Pigeon Forge, Tennessee, home of the Dollywood Theme Park, have risen from 120 million

dollars in 1985 to 210 million dollars in 1987. Marketing research by Pigeon Forge indicates that Great Smoky Mountains National Park remains the number one draw into the region but the competing attractions are on an astoundingly rapid rise. The implications to various aspects of park management concerning these kinds of regional dynamics are obvious.

The expenditures in the region by park visitors is estimated to have exceeded 230 ^{million} ~~billion~~ dollars in 1985. The park represents the anchor of a major industry in the Southern Appalachians. The nature of these expenditures is such that they roll over frequently in the local community and ultimately represent a much greater overall contribution to the economy of the region.

Another trend of importance is the decline in percentage of park patrons that are residents of the region. At the same time, there has been a significant increase in the rate of familiarity that visitors have with the park and its facilities. Of the 9.32 million plus visits recorded at GRSM in 1985, it is estimated that approximately 100,000 groups of visitors were on their first visit to the park. Interpretive services are relatively lightly attended. Visitors indicated that an unmet market may exist. There exists a significant lack of awareness of programs and a sense that they are not packaged in a manner that is convenient to incorporate in the typical visit. A high degree of interest in interpretive services was expressed.

Is there more than one Great Smoky Mountains National Park? From a visitor behavior standpoint, there are two! Dramatic seasonal differences occur between the two peak use seasons of summer and fall, when 70 percent of the visitation occurs. Youth and active recreation belong to the summer.

Retirees and relatively short windshield trips are the norm during the fall foliage season. Visitor services, as they were packaged in 1985, were much more popular in the summer. Visitor services should be tailored to these seasonal differences.

Another dynamic in use patterns and clientele is comparing the visitors using the 3 major park entrances versus the 15 finger entrances. The finger entrance patrons are younger, more likely to be locals, and regular users of the park. Their recreational activities are more resource oriented. These patrons are very knowledgeable about their favorite part of the park.

These insights, and the many others contained in the body of this report, barely scratch the surface of the kinds of dynamics of visitor behavior with which park managers should be familiar. The scope of this study and limits of the sampling design forbid any in-depth study of important visitor behaviors and attitudes such as the use of the extensive trail system, effectiveness of the interpretive programs, satisfaction with maintenance services, use of backcountry shelters and campsites and so forth. When these studies are conducted, the findings can be put in context with the overall clientele at Great Smoky Mountains National Park as defined by this research project.

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APPENDIX A
TABLES A-1 THROUGH A-26

Table A-1. Sample sizes of data sets presented.

<u>Data set and subset</u>	<u>Sample size</u>
1956 GRSM travel study	
Groups of respondents	29,928
1975 GRSM ARMS study	
Respondents	6,345
Groups associated with respondents	14,568
1985 GRSM Visitor use study	
Respondents	1,978
Respondents on recreation visit	1,922
3 Main park entrances	1,839
Greenbrier	83
Summer	1,109
Greenbrier	83
Fall	813
Local	241
Nonlocal	1,681
Summer	970
Greenbrier	61
Fall	710
Groups associated with respondents on recreational visit	5,713
3 Main park entrances	5,494
Greenbrier	219
Summer	3,451
Greenbrier	219
Fall	2,043
Local	606
Nonlocal	5,107
Summer	3,319
Greenbrier	219
Fall	1,788

Sources: 1985 GRSM Visitor Survey
1975 ARMS Visitor Survey
1986 GRSM Travel Study

Table A-2. Project Sampling Design - Percentage of visits by location compared to percentage of groups sampled in the fall and summer.

<u>Location</u>	<u>Visits - 1985</u>	<u>Percentage</u>	
		<u>Groups sampled - Summer n=1,128</u>	<u>Groups sampled - Fall n=850</u>
Gatlinburg	43	48	48
Cherokee	22	24	25
Townsend	16	21	27
Greenbrier	1	7	0

Source: 1985 GRSM Visitor Survey - total sample population.
GRSM visitor use records.

Table A-3. Groups sampled by day of week and interview site.

<u>Day of Week</u>	<u>Gatlinburg n=961</u>	<u>Cherokee n=488</u>	<u>Townsend n=446</u>	<u>Greenbrier n=83</u>	<u>Total n=1,978</u>
Saturday	135	51	85	1	272
Sunday	102	0	96	0	198
a. Subtotal	237	51	181	1	470
Monday	106	63	59	30	258
Tuesday	170	146	36	9	361
Wednesday	148	82	89	9	328
Thursday	206	61	52	12	331
Friday	94	85	29	22	230
b. Subtotal	724	437	265	82	1,508
a.+b. Total	961	488	446	83	1,978

Source: 1985 GRSM Visitor Survey - total sample population.

Table A-4. Groups sampled by time of day.

<u>Time Period</u>	<u>Percentage n=1,920</u>	
9:00 - 9:59 a.m.	2.0	
10:00 - 10:59	7.8	23.2%
<u>11:00 - 11:59</u>	<u>13.4</u>	
12:00 - 12:59 p.m.	14.0	
1:00 - 1:59	17.4	
2:00 - 2:59	17.6	
3:00 - 3:59	17.8	76.8%
4:00 - 4:59	9.6	
5:00 - 5:59	0.3	
6:00 - 6:59	0.1	
TOTAL	100.0%	

Source: 1985 GRSM Visitor Survey - total sample population

Table A-5. Age of park visitors.

Age class*	Year/Season Percentage			
	Three main entrances	Greenbrier	Three main entrances	
	Summer 1985	Summer 1985	Fall 1985	ARMS 1975
	n=3,100	n=219	n=1,788	n=14,568
0-17	25.6	30.6	6.4	20.0
18-29	12.5	19.6	13.4	22.0
30-39	25.3	21.9	16.9	19.0
40-49	17.4	15.1	15.9	16.0
≥50	19.2	12.8	47.4	22.0
TOTALS	100.0	100.0	100.0	100.0

*All car occupants were included in the analysis.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population.
1975 ARMS Visitor Survey - nonlocal sample population.

Table A-6. Ten-year trends in education.

	Year			
	Percentage			
<u>Years of school completed*</u>	<u>1985 n=1,592</u>	<u>1980 Census</u>	<u>1975 n=7,848</u>	<u>1970 Census</u>
Elementary (8 years)	4.2	18.2	NA**	28.2
High school (1-3 years)	8.8	15.3	5.6	19.4
High school graduate	40.6	34.6	44.8	31.1
College (1-3 years)	21.0	15.7	23.1	10.6
College (4 years or more)	<u>25.4</u>	<u>16.2</u>	<u>26.5</u>	<u>10.7</u>
TOTALS	100.0	100.0	100.0	100.0

*For persons 25 years old and over.

**This education type was not a category during the 1975 survey.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population at three main entrances.
 1975 ARMS Visitor Survey - nonlocal sample population.
 1985 Statistical Abstract of the United States Bureau of the Census.

Table A-7. Occupation by season.

Occupation Type	Season	
	Percentage Summer n=1,101	Percentage Fall n=807
White collar	19.7	27.3
Blue collar	37.2	23.0
Service worker	15.3	12.0
Farm worker	1.5	0.6
Retired	10.9	28.5
Student	3.5	1.4
Housewife	9.9	5.1
Unemployed	1.1	1.0
Other	<u>0.9</u>	<u>1.1</u>
TOTALS	100.0	100.0

Source: 1985 GRSM Visitor Survey - total sample population.

Table A-8. Income by season and park entrance.

Income categories*	Season		
	Summer Three main entrances n=848	Summer Greenbrier n=61	Fall Three main entrances n=657
Less than \$5,000	0.8	1.6	1.3
5,000 - 9,999	2.6	4.9	2.9
10,000 - 19,999	16.1	6.6	12.7
20,000 - 29,999	28.1	23.0	24.4
30,000 - 39,999	23.6	29.5	26.0
40,000 - 49,999	14.7	13.1	14.7
50,000 - 74,999	9.7	18.0	12.6
Over 75,000	4.4	3.3	5.4
TOTALS	100.0	100.0	100.0

*Reported family income before taxes withheld.

Source: 1985 GRSM Visitor Survey - nonlocal sample population.

Table A-9. Average party size by month.

<u>Month</u>	<u>Average group size</u>	<u>No. days data collected</u>	<u>No. observations (N)</u>
June	3.35	4	105
July	3.60	26	596
August	3.42	19	427
September	2.72	6	86
October	2.65	26	725
November	3.40	1	20

Source: 1985 GRSM Visitor Survey - total sample population

Table A-10. Sources of park information.

<u>Type of Information</u>	<u>Local sample population percentage* n=241</u>	<u>Nonlocal sample population percentage* n=1,681</u>
Personally familiar with park	96.3	58.7
Family	27.8	25.2
Friends	30.3	29.4
Park newspaper	14.9	21.8
Park radio	7.5	15.4
Bulletin boards in visitor center	22.4	27.4
Bulletin boards in campgrounds	13.3	10.1
Travel agent	0.4	1.6
Ranger at visitor center	14.1	15.2
Other park literature	20.3	32.3
Other	6.2	13.1

*Percentages sum to greater than 100 percent because respondent was allowed to select more than one response.

Source: 1985 GRSM Visitor Survey - Total sample population.

Table A-11. Trends in type of vehicle.

Vehicle Type	Year Percentage	
	1985 n=1,605	1975 n=5,164
Passenger	63	71
Van	9	NA*
Station wagon	11	12
Pickup w/camper	6	7
Pickup w/o camper	3	1
Motor home	5	7
Jeep type	2	NA
Motorcycle	1	1
Bicycle	0	NA
Moped	0	NA

*This vehicle type was not a category during the 1975 survey.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population.
1975 ARMS Visitor Survey - nonlocal sample population.

Table A-12. Park visitation by month for 1985.

<u>Month</u>	<u>Visits</u>	<u>Percentage</u>
January	174,000	1.9
February	198,400	2.1
March	422,000	4.5
April	598,900	6.4
May	631,700	6.8
June	1,215,800	13.0
July	1,610,600	17.3
August	1,391,100	14.9
September	996,000	10.7
October	1,340,400	14.4
November	503,200	5.4
December	<u>237,200</u>	<u>2.5</u>
TOTAL	9,319,300	100.0

70.3%

Source: GRSM visitor use records

Table A-13. Visitation descriptors by clientele, park entrance, and season.

Characteristic type	Total sample n=1,922	Local popu- lation n=241	Nonlocal popu- lation n=1,681	Three main entrances n=1,839	"Finger" entrances n=61	Summer Three main entrances n=1,109	Fall Three main entrances n=813
Percent of population	100.00	12.50	87.50	81.00	19.00	44.90	25.10
Mean visits per day	1.12	1.08	1.13	1.12	1.37	1.14	1.10
Mean days per trip	2.79	1.32	3.00	2.75	6.11	3.06	2.89
Mean trips per year	5.12	27.11	1.44	5.20	8.80	5.80	4.80
Mean days in region	3.89	NA	4.16	3.81	6.41	4.26	3.96

Source: 1985 GRSM Visitor Survey - total sample population

Table A-14. User characteristic comparisons among trip routes (n=1,839).

<u>Trip Route</u>	<u>Average age (years)</u>	<u>Percent local</u>	<u>Average visits per year</u>	<u>Average time per trip (hrs.)</u>
1. Gatlinburg-Gatlinburg	35	18	5.6	3.2
2. Gatlinburg-Cherokee	37	3	2.5	3.9
3. Cherokee-Gatlinburg	36	7	1.2	3.0
4. Townsend-Townsend	34	12	6.3	4.0
5. Gatlinburg-Townsend	38	31	13.2	4.2
6. Townsend-Gatlinburg	36	3	1.6	4.4
7. Cherokee-Cherokee	39	2	1.3	5.9
8. Cherokee-Townsend	38	10	9.5	3.4
9. Townsend-Cherokee	42	2	2.0	5.1

Source: 1985 GRSM Visitor Survey - total sample population

Table A-15. Length of stay at the three visitor centers.

Time class (minutes)	Percentage of groups attending visitor centers		
	Sugarlands n=355	Oconaluftee n=188	Cable Mill n=94
Less than 1	6.3	9.1	7.5
1 - 15	38.5	28.0	16.4
16 - 30	35.1	30.4	47.7
31 - 60	16.7	27.0	24.0
61 - 120	2.9	4.7	5.5
121 - 180	0.0	0.0	0.0
181 - 240	0.5	0.0	0.0
Over 240	0.0	0.6	0.0
TOTALS	100.0	100.0	100.0

Source: 1985 GRSM Visitor Survey - total sample population

Table A-16. Frequency of activity participation rates by the top 10 stop locations.

Stop location	ACTIVITY									
	Percentage of activity involvement by stop									
	View scenery	Photo- graphy	View wild- flowers and plants	View wild- life	Walk/ day hike	View historic buildings	See exhibit	Use rest- room	Talk to ranger	Get inform- ation
1. Cades Cove	26.5	9.2	9.2	17.6	1.9	20.5	0.6	1.0	1.1	2.1
2. Newfound Gap	44.9	25.2	7.8	2.1	6.9	0.1	4.2	4.1	0.7	0.1
3. Sugarlands Visitor Center	2.0	0.4	0.1	0.0	3.4	0.0	26.4	12.4	12.1	20.8
4. Pull-offs (general)	47.5	31.5	3.3	2.1	2.9	0.4	0.8	0.0	0.0	0.0
5. Clingmans Dome	38.2	19.0	10.6	4.1	18.4	0.0	0.0	3.5	1.7	0.0
6. Oconaluftee Visitor Center	14.9	6.7	3.3	2.0	7.5	18.1	10.5	3.4	6.7	10.1
7. Elkmont campground	7.5	.5	2.5	1.5	3.5	0.0	0.0	7.0	5.0	3.0
8. Chimneys pull-out	38.2	19.0	10.6	4.1	18.4	0.0	0.0	0.0	0.0	0.5
9. Cable Mill Visitor Center	15.8	6.9	6.9	5.6	4.3	23.1	5.9	9.9	3.6	4.0
10. Greenbrier Cove	12.9	4.7	8.2	1.2	11.8	0.0	0.0	1.2	0.0	0.0

Source: 1985 GRSM Visitor Survey - total sample population.

Table A-17. Type of recreational equipment.

Type of Equipment	Local Sample Population	Nonlocal Sample Population
	Percentage* n=241	Percentage* n=1,669
Hiking shoes	11.6	19.0
Camera	34.0	75.9
Binoculars	11.6	27.4
Cooking equipment	8.3	19.0
Tent	4.6	9.6
Backpack	4.1	7.1
Camper in tow	0.4	5.8
Bicycle	5.8	2.4
Fishing gear	7.1	9.6
Swimming gear	14.9	15.6
None of the above	42.3	15.9

*Percentages sum to greater than 100 percent because respondent was allowed to select more than one response.

Source: 1985 GRSM Visitor Survey - total sample population.

Table A-18. Location of ranger contact by season.

Summer		Fall	
Location	Percentage n=144	Location	Percentage n=108
Unspecified visitor center	51.4	Unspecified visitor center	68.5
Cades Cove	11.8	Sugarlands Visitor Center	9.3
Sugarlands Visitor Center	7.6	Cades Cove	8.3
Elkmont campground	4.9	Oconaluftee Visitor Center	3.7
Clingmans Dome	4.2	Smokemont campground	2.8
Oconaluftee Visitor Center	3.5	Elkmont campground	2.8
Newfound Gap	2.1	Clingmans Dome	1.9
Chimney Tops picnic area	2.1	Other locations	2.7
Other locations	12.4		

Source: 1985 GRSM Visitor Survey - total sample population

Table A-19. Location of visitor service activities by participation rate.

<u>Get information (n=366)</u>		<u>Purchase books and materials (n=264)</u>	
1. Sugarlands Visitor Center	46.6%	1. Sugarlands Visitor Center	25.0%
2. Oconaluftee Visitor Center	20.5	2. Oconaluftee Visitor Center	24.2
3. Cades Cove Loop Road	14.2	3. Cades Cove loop road	22.7
4. Cable Mill Visitor Center	6.8	4. Cable Mill Visitor Center	17.4
5. Cades Cove (other)	2.2	5. Mingus Mill	4.2
6. Elkmont campground	2.2	6. Cades Cove entrance	4.2
<u>Use restroom (n=549)</u>		<u>See exhibit (n=303)</u>	
1. Sugarlands Visitor Center	15.9%	1. Sugarlands Visitor Center	36.0%
2. Oconaluftee Visitor Center	12.8	2. Oconaluftee Visitor Center	28.1
3. Newfound Gap	12.4	3. Newfound Gap	15.2
4. Metcalf Bottoms picnic area	8.6	4. Cable Mill Visitor Center	8.6
5. Clingmans Dome	6.7	5. Mingus Mill	1.7
<u>Ranger walk (n=47)</u>		<u>Evening program (n=17)</u>	
1. Cable Mill Visitor Center	42.6%	1. Elkmont campground	54.7%
2. Oconaluftee Visitor Center	19.2	2. Smokemont campground	23.8
3. Mingus Mill	10.6	3. Cades Cove campground	11.8
4. Cades Cove loop road	10.6		
5. Cades Cove entrance area	8.6		
<u>View film (n=18)</u>		<u>Get permit (n=2)</u>	
1. Sugarlands Visitor Center	94.4%	1. Sugarlands Visitor Center	50.0%
2. Cades Cove	5.6	2. Smokemont campground	50.0

Table A-20. Characteristics of visitors who participated in various visitor services.

<u>Visitor Characteristics</u>	<u>Service Category (H)</u>	
	<u>Yes n=280</u>	<u>No n=1,549</u>
Mean age*	37.0	37.1
Mean party size*	3.2	3.2
Percent on first visit	17.1	17.9
Percent male	48.3	48.1
Percent white	97.8	98.1
Percent nonlocal	89.3	88.9
Mean number days in park	2.6	2.8
Mean number days in region	3.4	3.7
Percent attended college	46.0	46.6
Income \geq \$20,000 (%)	76.0	79.6
Percent that camped in park	4.3	4.5
Mean numbers of nights in park	0.4	0.5
Percent aware of interpretive programs in park	41.4	45.4

*All car occupants were included in the analysis - therefore different n.

Source: 1985 GRSM Visitor Survey - total sample population minus Greenbrier population.

Table A-21. Average group expenditures per day by season and park entrance.

	<u>\$/group/day</u>	<u>\$/person/day</u>
Overall (n=907)	101.79	31.81
Three main entrances		
Summer (n=444)	107.48	29.86
Fall (n=417)	95.48	34.10
Greenbrier entrance		
Summer (n=46)	83.34	22.52

Source: 1985 GRSM Visitor Survey - nonlocal sample population

Table A-22. Percentage of groups who reported expenditure during preceding day.

<u>Expenditure Type</u>	<u>Summer 1985 n=444</u>	<u>Fall 1985 n=417</u>	<u>Greenbrier 1985 n=46</u>	<u>ARMS 1975 n=540</u>
Restaurant	72	78	54	NA*
Food	49	25	63	96
Gasoline/oil	50	43	48	94
Hotel/motel	60	64	30	62
Campsite	28	22	33	24
Gifts/souvenirs	47	41	33	71
Admission fees	33	9	7	31
Recreation	17	5	9	7
Other	2	9	0	NA

*NA - This expenditure type was not a category during the 1975 survey.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population
1975 ARMS Visitor Survey - nonlocal sample population

Table A-23. Range of group expenditures.

<u>Group Expenditure category</u>	<u>1985 Dollars n=907</u>
Gifts/souvenirs	0 - 3000
Hotel/motel	0 - 345
Restaurant	0 - 250
Gas/oil	0 - 120
Food	0 - 100
Admission fees	0 - 100
Campsite	0 - 100
Recreation	0 - 90

Source: 1985 GRSM Visitor Survey - nonlocal
sample population

Table A-24. Average* group expenditures per day in constant** dollars.

<u>Expenditure</u>	Summer 1985 <u>n=444</u>	Fall 1985 <u>n=417</u>	Greenbrier 1985 <u>n=46</u>	ARMS 1975 <u>n=540</u>	Travel 1956 <u>n=29,928</u>
Restaurant	\$14.31	\$13.10	\$10.84	\$ NA***	\$9.64
Food	6.30	6.61	11.68	13.40	
Gas/oil	7.83	8.08	8.40	8.37	3.93
Hotel/motel	24.10	21.91	25.06	17.36	7.45
Campsite	4.64	4.48	4.81	3.76	1.66
Gifts/souvenirs	20.84	23.70	24.37	7.00	NA
Admission fees	12.20	8.70	4.72	7.04	NA
Recreation	7.97	8.69	10.30	13.47	NA
Entertainment	NA	NA	NA	NA	1.93
Other	10.69	12.15	--	NA	4.41

*Mean values do not include zero response.

**Constant dollars based on the implicit price deflators for gross national product using 1972 as the base year (\$100 = \$100).

***NA - This expenditure type was not a category during that survey.

Sources: 1985 GRSM Visitor Survey - nonlocal sample population
1975 ARMS Visitor Survey - nonlocal sample population
1956 GRSM Travel Study - total sample population

Table A-25. Previous night's lodging by community by season.

<u>Community/State</u>	<u>Summer Percentage n=436</u>	<u>Fall Percentage n=357</u>
Gatlinburg, TN	44.2	46.7
Pigeon Forge, TN	21.3	18.8
Cherokee, NC	11.2	13.2
Townsend, TN	5.3	6.8
Maggie Valley, NC	2.8	2.2
Knoxville, TN	3.0	1.7
Asheville, NC	2.5	1.1
Bryson City, NC	1.1	0.6
Sevierville, TN	0.7	0.6
Franklin, TN	0.7	0.6
Cosby, TN	0.2	0.3
Fontana Village, NC	0.2	0.3
Other	<u>7.3</u>	<u>7.1</u>
TOTAL	100.0	100.0

Source: 1985 GRSM Visitor Survey - nonlocal sample population

Table A-26. Average group expenditures per day by community.

State/ Community	Expenditure Type (1985 dollars)								
	Restaurant	Food	Gas/ Oil	Hotel/ Motel	Campsite	Gifts	Fees	Recreation	Other
TENNESSEE:									
Gatlinburg	34.03	14.60	19.13	62.54	19.10	50.59	21.92	21.07	38.43
Pigeon Forge	30.59	14.02	17.59	50.77	14.39	58.20	36.75	16.41	16.88
Sevierville	23.60	20.20	18.68	40.20	--	--	--	--	20.00
Townsend	29.90	12.45	15.10	46.34	11.49	17.43	19.86	14.00	36.67
Cosby	30.00	10.00	13.25	41.50	8.20	--	26.00	--	--
Knoxville	39.27	18.30	18.79	37.66	--	3.50	6.70	10.00	9.00
Gatlinburg and Pigeon Forge	53.06	9.00	--	--	--	59.31	45.40	22.50	--
Maryville	10.33	17.86	13.50	35.00	6.00	12.00	--	--	--
NORTH CAROLINA:									
Cherokee	27.16	12.29	18.68	43.57	9.96	63.24	26.37	18.44	19.80
Bryson City	25.83	23.90	12.71	30.29	8.00	47.50	--	5.00	--
Sylva	18.33	18.50	14.80	42.00	--	--	--	21.50	--
Maggie Valley	34.62	15.86	18.00	47.49	10.00	18.89	32.10	15.67	19.50
Fontana Village	20.00	10.00	10.00	57.50	--	--	20.00	--	--
Asheville	25.44	31.25	20.60	43.80	10.13	28.33	31.50	--	--

Source: 1985 GRSM Visitor Survey - nonlocal sample population

APPENDIX B
GRSM VISITOR SURVEY QUESTIONNAIRE

GRSMNP VISITOR SURVEY

OMB #:1024-0030
Expiration Date 12/31/85

INTERVIEW #: _____ INTERVIEWER #: _____ INTERVIEW SITE _____

DATE: _____ TIME (Military): _____

WEATHER CONDITIONS: Mild _____ Severe (Inhibits visitor activity) _____

1. (TO VEHICLE DRIVER) Are you in the park today for business or pleasure?
_____ Business (TERMINATE INTERVIEW) _____ Pleasure

(IF PLEASURE) We are conducting a short interview to find out what activities people are pursuing here in the Smokies. I would like to interview (SELECT RESPONDENT) you for a few minutes. O.K.?

2. What was your date of arrival in the park? _____
Month Day Year
3. How many days did you spend or do you expect to spend in the park? _____ Days
4. On this visit, have you spent the night or do you intend to spend the night in the park? _____ Yes _____ No _____ Undecided
(IF YES) How many nights? _____ Nights (_____ LAST DAY CAMPER)
5. What is your home county, state, and 5 digit zip code? County _____
State _____ Zip Code _____
- (IF NOT U.S. CITIZEN)
What is your home country? _____
6. (IF NOT LOCAL - TN = Knox, Cocke, Sevier, Blount, Monroe; NC = Haywood, Graham, Swain)
How many days to you plan to stay in the Great Smoky Mountains region as defined by this map? (SHOW MAP) _____ Days
7. Is this your first visit to the park? _____ Yes _____ No
(IF NO) How many other times have you visited the park...
in the last year? _____
in the last 5 years? _____
8. How many people are in your party, including yourself? _____ Persons
(IF CAN'T ACCOUNT FOR ALL) Are some in another vehicle _____ Yes _____ No

(HAND GROUP INFORMATION SHEET AND PENCIL TO AN ADULT IN VEHICLE) Would you mind filling this out while I am talking to your friend?

(IF MORE THAN ONE VEHICLE, CIRCLE GROUP MEMBERS THAT ARE IN VEHICLE OF RESPONDENT)

Please look at this map and trace your route during your visit to the park today. Tell me where you have been and where you plan to go. Please refer to the site names on the map when possible. Also let me know if you spoke to a Park Ranger at any of your stops. (REPEAT SERIES OF QUESTIONS 10, 11, 12, AND 13 FOR EACH STOP)

- (IF LEAVING PARK FOR LAST TIME AND CAMPED LAST NIGHT IN PARK, ASK FOR ADDITIONAL STOPS FROM PREVIOUS DAY, STARTING WITH THE TIME OF INTERVIEW.)

Other

(RETRIEVE MAP FROM RESPONDENT)

14. (IF DID NOT INDICATE CONTACT WITH RANGER)

Did you talk to a ranger today? _____ Yes _____ No
(IF YES) Where? _____ (USE LOCATION # IF APPROPRIATE)

15. (IF DID NOT ATTEND INTERPRETIVE PROGRAM) Are you aware that the park staff provides interpretive programs? _____ Yes _____ No

(IF YES) Why didn't you attend one?

_____ No interest
_____ Not enough time
_____ Inconvenient time
_____ Other _____

16. Which of the following sources of information, if any, did you use to find out about activities or programs in the park? (READ OFF)

_____ Personal familiarity with the park
_____ Family
_____ Friends
_____ Park newspaper
_____ Park radio
_____ Bulletin boards in visitor center
_____ Bulletin boards in campgrounds
_____ Travel agent
_____ Ranger at visitor center
_____ Other park literature
_____ Other _____

17. (IF ON TRIP YESTERDAY)

Please try to think back to all of your expenses yesterday. About how much did you and your party spend on each of the following? Also, in which community did you spend it? (INDICATE OR IF DON'T REMEMBER)

	Amount	Place (city, state)
Restaurant	_____	_____
Food	_____	_____
Gasoline, oil	_____	_____
Hotel, Motel	_____	_____
Campsite	_____	_____
Gifts/souvenirs	_____	_____
Admission fees	_____	_____
Recreation	_____	_____
Other	_____	_____

18. Now I would like your opinion. Should roadsides in the park be mowed several times a year or be allowed to grow up with wildflowers and grasses, being mowed only once a year?

_____ Mowed several times a year _____ Mowed once a year _____ No opinion

19. What is your occupation? _____

20. (IF EMPLOYED) How many paid vacation days do you get a year? _____ Days

(IF NOT EMPLOYED) How many paid vacation days does the head of your household get a year? _____ Days

(HAND DEMOGRAPHICS CARD TO RESPONDENT OR APPROPRIATE ADULT)

21. Which of these letter categories represents your marital status? _____
22. Which letter indicates your level of education? _____
23. Please indicate which letter refers to your race. _____
24. Which of these letter categories best describes your family income before taxes? _____

(RETRIEVE DEMOGRAPHICS CARD FROM RESPONDENT)

(RETRIEVE GROUP INFORMATION SHEET AND CHECK IT FOR ACCURACY AND COMPLETENESS)

OBSERVED CHARACTERISTICS - DO NOT ASK QUESTIONS 25-26

25. Special characteristics:

_____ None
_____ Physical handicap
_____ Sensory handicap
_____ Elderly

_____ Non-English speaking
_____ Other _____

26. What was the attitude of the respondent toward this survey?

Excellent			Poor	
1	2	3	4	5

(HAND OUT GROUP INFORMATION CARD IF NOT YET HANDED OUT. TELL RESPONDENT TRAVELING ALONE TO FILL OUT ONLY QUESTIONS 3, 4, and 5.)

(HAND OUT DESIGNATED MAIN-BACK QUESTIONNAIRE WITH APPROPRIATE INTRODUCTION)

That's all I have to ask of you!

Thank you so much for taking time from your busy day to help us compile this important information.

Goodbye!

GREAT SMOKY MOUNTAINS NATIONAL PARK - VISITOR SURVEY

1. Please answer the following questions about yourself and the other people in your group:

		(Check appropriate categories)					
		Age in Years	Male	Female	Driver's Immediate Family	Other Relatives	Friend
Driver		_____	_____	_____			
Passenger	#1	_____	_____	_____	_____	_____	_____
	#2	_____	_____	_____	_____	_____	_____
	#3	_____	_____	_____	_____	_____	_____
	#4	_____	_____	_____	_____	_____	_____
	#5	_____	_____	_____	_____	_____	_____
	#6	_____	_____	_____	_____	_____	_____
	#7	_____	_____	_____	_____	_____	_____
	#8	_____	_____	_____	_____	_____	_____
	#9	_____	_____	_____	_____	_____	_____
	#10	_____	_____	_____	_____	_____	_____

2. Which of these people is talking to the surveyor? _____

3. Do you have a family pet with you? _____ Yes _____ No
If so, what kind? _____

4. Check your vehicle type.

- ☐ Sedan
☐ Station wagon
☐ Van
☐ Pickup truck with camper
☐ Motor home
☐ Pickup truck without camper
☐ Jeep type
☐ Motorcycle
☐ Moped
☐ Bicycle
☐ None

Is your vehicle rented? _____ Yes _____ No

5. Check if your group has any of the following recreational equipment with them.

- ☐ Hiking shoes
☐ Camera
☐ Binoculars
☐ Cooking equipment
☐ Tent
☐ Backpack
☐ Camper in tow
☐ Bicycle
☐ Fishing gear
☐ Swimming gear (inner tube, etc.)
☐ None of the above

MARITAL STATUS CATEGORIES

- A. Single
- B. Married
- C. Divorced
- D. Separated
- E. Widowed

EDUCATION CATEGORIES

- A. 8th grade or less
- B. 9th - 11th grade
- C. 12th grade
- D. 13 - 15 years
- E. 16 years (college graduate)
- F. 17 or more years (college graduate)

RACE OR CULTURAL CATEGORIES

- A. American Indian or Alaskan native
- B. Asian or Pacific islander
- C. Black, not of Hispanic origin
- D. Hispanic
- E. White, not of Hispanic origin
- F. Other

INCOME CATEGORIES

- A. Less than \$5,000
- B. \$5,000 - \$9,999
- C. \$10,000 - \$14,999
- D. \$15,000 - \$19,999
- E. \$20,000 - \$24,999
- F. \$25,000 - \$29,999
- G. \$30,000 - \$34,999
- H. \$35,000 - \$39,999
- I. \$40,000 - \$44,999
- J. \$45,000 - \$49,999
- K. \$50,000 - \$74,999
- L. \$75,000 and above

APPENDIX C

GRSM VISITOR SURVEY SAMPLING RECORDS DATA SHEET

SAMPLING RECORDS

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environment and cultural value of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

U.S. DEPARTMENT OF THE INTERIOR

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